

# **National Grid SA-COA**

## **PRODUCTION FILE**

**Contractor : ABB Contracting Co.**

**Project : SS 8709- 132/13.8kV in Alkharj City**

**Contract No : 11131113/00**

**Substation : 8709**

**Subject : 132/13.8Kv Transformer GT-1 (+R05.1)  
Relay panel-1**

**ABB**

# **National Grid SA-COA**

## **PRODUCTION FILE**

**Contractor : ABB Contracting Co.**





**Project : SS 8709- 132/13.8kV in Alkharj City**

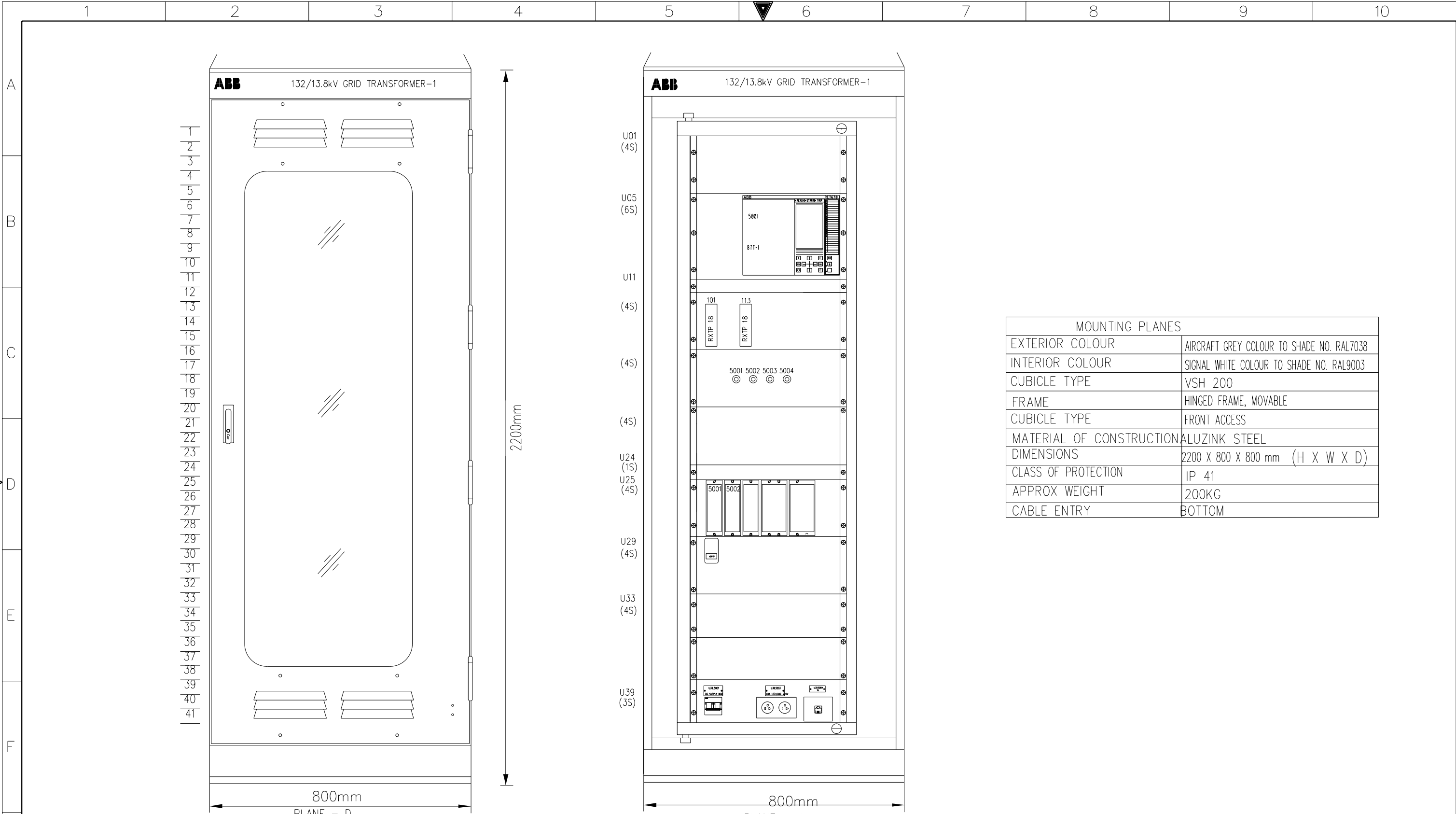
**Contract No : 11131113/00**

**Substation : 8709**

**Subject : 132/13.8Kv Transformer GT-1 (+R05.2)  
Relay panel-2**



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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																																																												
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	TITLE : Assembly Drawing – +R05.1 [GT-1]																																																																																																			
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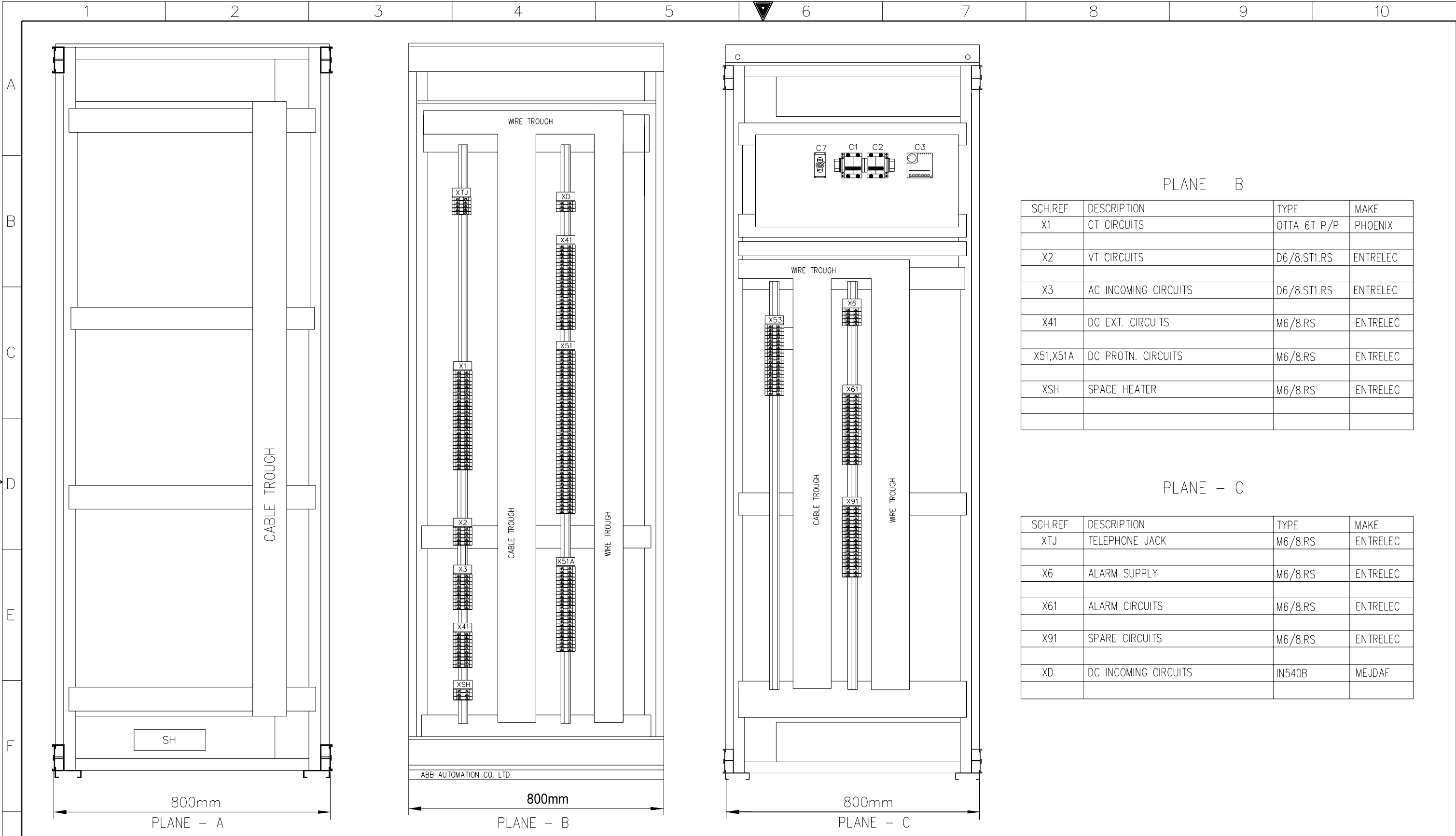


AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING  
132/13.8kV GT-1 RELAY PANEL-1 +R05.1  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322926	SHT	CONT.	01
			G01	G02	




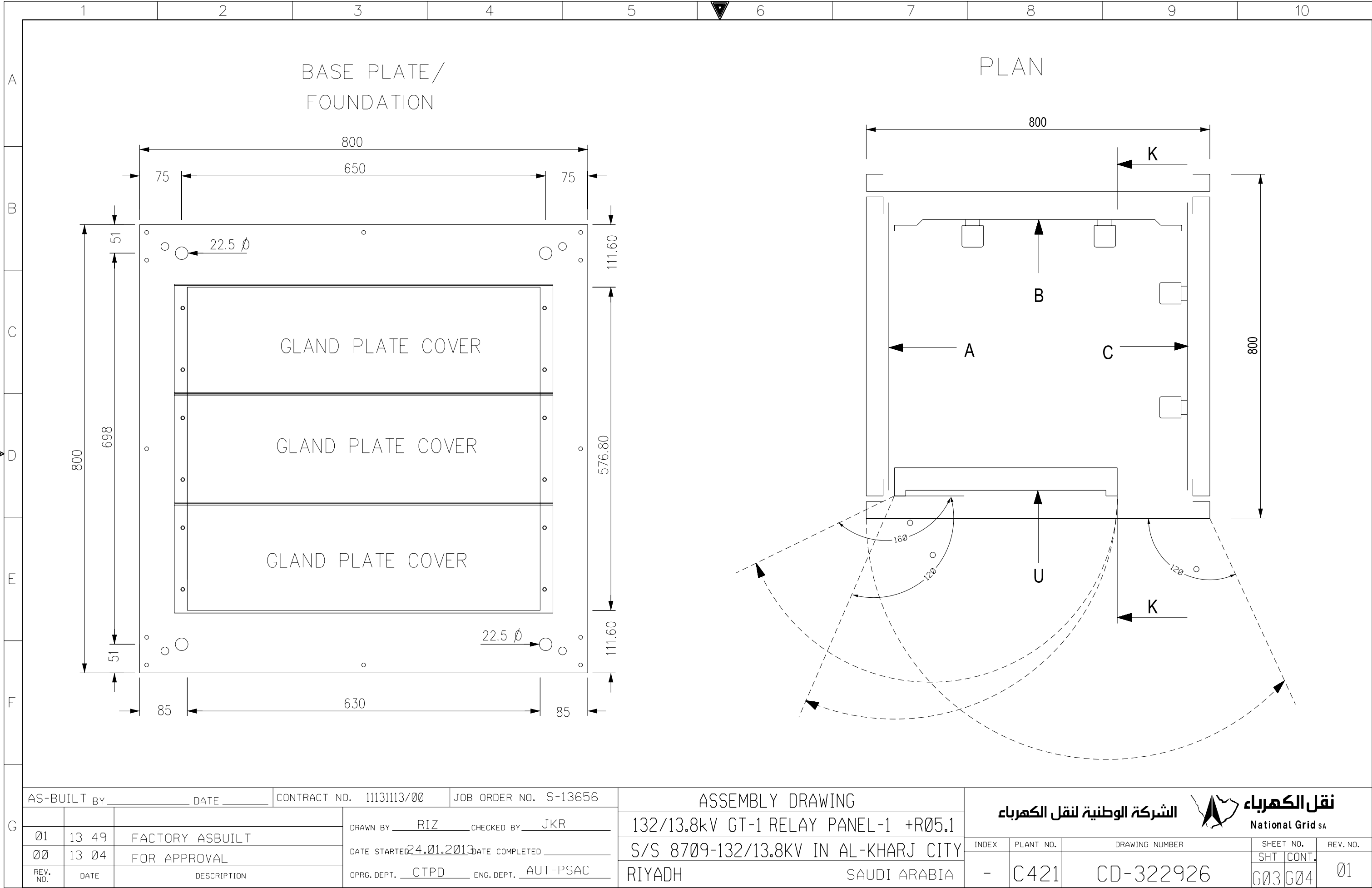
PLANE – B

SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHOENIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X41	DC EXT. CIRCUITS	M6/8.RS	ENTRELEC
X51,X51A	DC PROTN. CIRCUITS	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

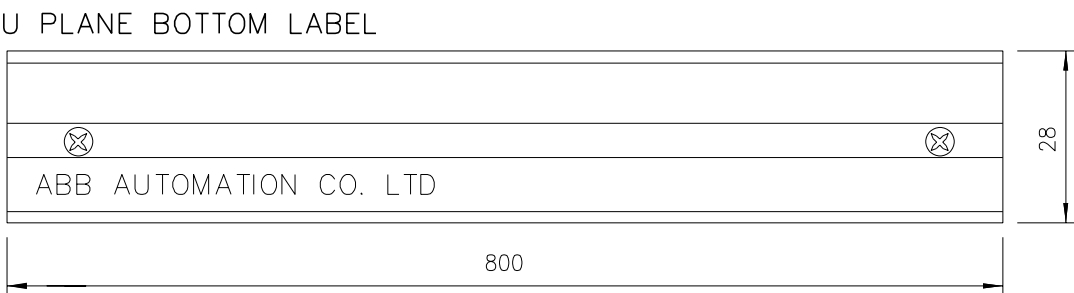
PLANE – C

SCH.REF	DESCRIPTION	TYPE	MAKE
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.RS	ENTRELEC
X91	SPARE CIRCUITS	M6/8.RS	ENTRELEC
XD	DC INCOMING CIRCUITS	IN540B	MEJDAF

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
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	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				G02	G03			







THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



MANUFACTURING LABEL	
<b>ABB</b> ABB Automation Co.Ltd.	
PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE:	2013
PANEL NO. :	+R05.1
DRAWING NO. :	S13656-CD-323928
MADE IN THE KINGDOM OF SAUDI ARABIA	

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING			<div><div><div><div>نقل الكهرباء</div><div>National Grid sa</div></div><div><div>الشركة الوطنية لنقل الكهرباء</div></div></div></div>				
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NG/D2-D (2012/01)

DMS VECTOR NGD200



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A											
B				RELAY CUBICLE- +R05.1 ACCOMODATING THE FOLLOWING							
	1	U05.5001	87T-1	NUMERICAL TRANSFORMER PROTECTION IED WITH FOLLOWING DETAILS		301	1	RET 670*1	ABB	1MRK 004 816-DC	
				FUNCTIONS			1			1MRK 004 005-DC	
				-CONFIGURATION ALTERNATIVE							
				DOUBLE BREAKER, 3WINDING (B40) BASIC							
				-CONTROL							
				HARDWARE							
				-ANALOG SYSTEM							
				TRANSFORMER INPUT MODULE,RING LUG TERMINALS 91+3U,1A							
				110/220/V,50/60HZ/(TRM)(BASIC SELECTED ALTERNATIVE)LOCATION/P40/							
C				TRANSFORMER INPUT MODULE,RING LUG TERMINALS 91+3U,1A							
				110/220/V,50/60HZ/(TRM)(BASIC SELECTED ALTERNATIVE)LOCATION/P41/							
				-CASING							
				POWER SUPPLY MODULE 90-250 VDC (PSM)							
				LOCATION P1/							
				NUMERIC PROCESSING MODULE 600MHZ, 256MB (NUM) BASIC							
				LOCATION/P30/							
				3/4\SX 19" RACK CASING MAX 5 I/O MOD,							
				2TRM (RACK)							
				COMBINED BACKPLANE MODULE MAX 5 I/O MOD.							
D				(BASIC SELECTED ALTERNATIVE) 2TRM (RACK)							
				UNIVERSAL BACKPLANE MODULE 2 ADM,2TRM (UBM) BASIC							
				-CONNECTION TYPE							
				STANDARD COMPRESSION CONNECTION TERMINALS )							
				LOCATION/P1-P16							
				-HUMAN MACHINE INTERFACE							
				MEDIUM GRAPHIC HMI,15 CONTROLLABLE OBJECTS							
				3/4 X 19"IEC (MHMI)							
				-IN/OUT MODULES							
				BINARY INPUT MODULE LOCATION P3,P5			2			1MRK 000 508-BB	
E				BINARY OUTPUT MODULE,24 OUTPUT RELAYS (BOM)			2			1MRK 000 614-AB	
				LOCATION P4							
				OPTICAL ETHERNET MODULE 2 GLASS INTERFACE IEC61850-8-1/IEC61850-9-2						1MRK 002 266-AA	
				(OEM)( SELECTED OPTION) LOCATION P31:1							
F	2	U12.101	TS-1	TEST SWITCH FOR RET670 RELAY		222	1	RTXP18	ABB	RK 926 115-BH	
		U12.113	TS-2	TEST SWITCH FOR RET670 RELAY		222	1	RTXP18	ABB	RK 926 115-BB	
G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS			<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>
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	REV. NO.	DATE	DESCRIPTION		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.	
					-	C421	CD-322926		SHT L01	CONT. L02 01	

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SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
3	U16.5001	S86T1	PUSH BUTTON BLACK COLOUR, WITH 1NO+1NC CONTACTS FOR RESET OF LOCKOUT RELAY (86T1)	232	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102
4	U16.5002	S86CBF	PUSH BUTTON BLACK COLOUR, WITH 1NO+1NC CONTACTS FOR RESET OF LOCKOUT RELAY (86CBF)	276	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102
5	U16.5003	S86B-1	PUSH BUTTON BLACK COLOUR, WITH 1NO+1NC CONTACTS FOR RESET OF LOCKOUT RELAY (86B-1)	276	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102
6	U16.5004	S86B-2	PUSH BUTTON BLACK COLOUR, WITH 1NO+1NC CONTACTS FOR RESET OF LOCKOUT RELAY (86B-2)	277	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102

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NG/D2-D (2012/01)

DMS VECTOR

NGD200

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	REV. NO.	DATE	DESCRIPTION												01




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	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	22		X1	BLOT CONNECTING TERMINAL BLOCKS DISCONNECTIBLE FOR CT CIRCUITS		304	60	OTTA 6T P/P	PHOENIX	0790462
B			X2	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR VT CIRCUITS		304	5	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X3	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		304	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X41	SPRING LOADED TERMINAL BLOCK FOR DC EXT. CIRCUITS		304	40	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
C			X51	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	97	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X6	SPRING LOADED TERMINAL BLOCK FOR STN COM		304	10	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X61	KNIFE TYPE TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		304	20	M6/8.SNB	ENTRELEC	1SNA 115 688 R2500
D			XTJ	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR TELEPHONE JACK		305	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER		305	3	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			XD	TERMINAL BLOCKS WITH BLOCKING DIODE, Vrrm=1kV, If=3A AND SURGE TRAP, ENERGY ABSORPTION RATING 8J (10/1000mS)		236,276	3	N4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270
E			X9	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR SPARE CONTACTS		295	20	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X51A	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	15	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X53	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	32	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
F										
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	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421 CD-322926 L05L06	

NG/D2-D (2012/01)

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	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY				
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

الشركة الوطنية لنقل الكهرباء		National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322926	SHT L07	CONT. G00
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E	CONTRACT NO. : 11131113/00																																																																																																																							
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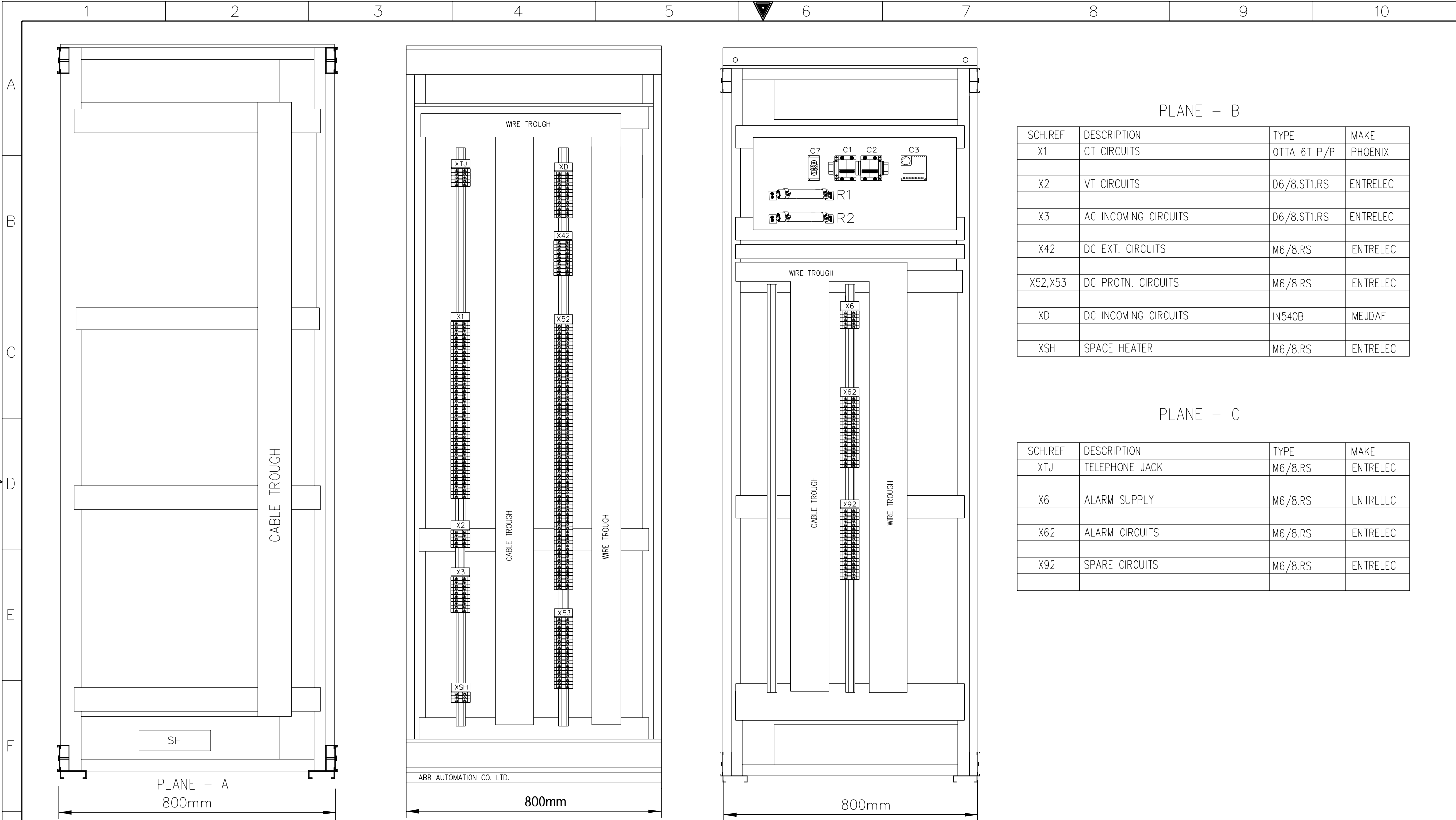
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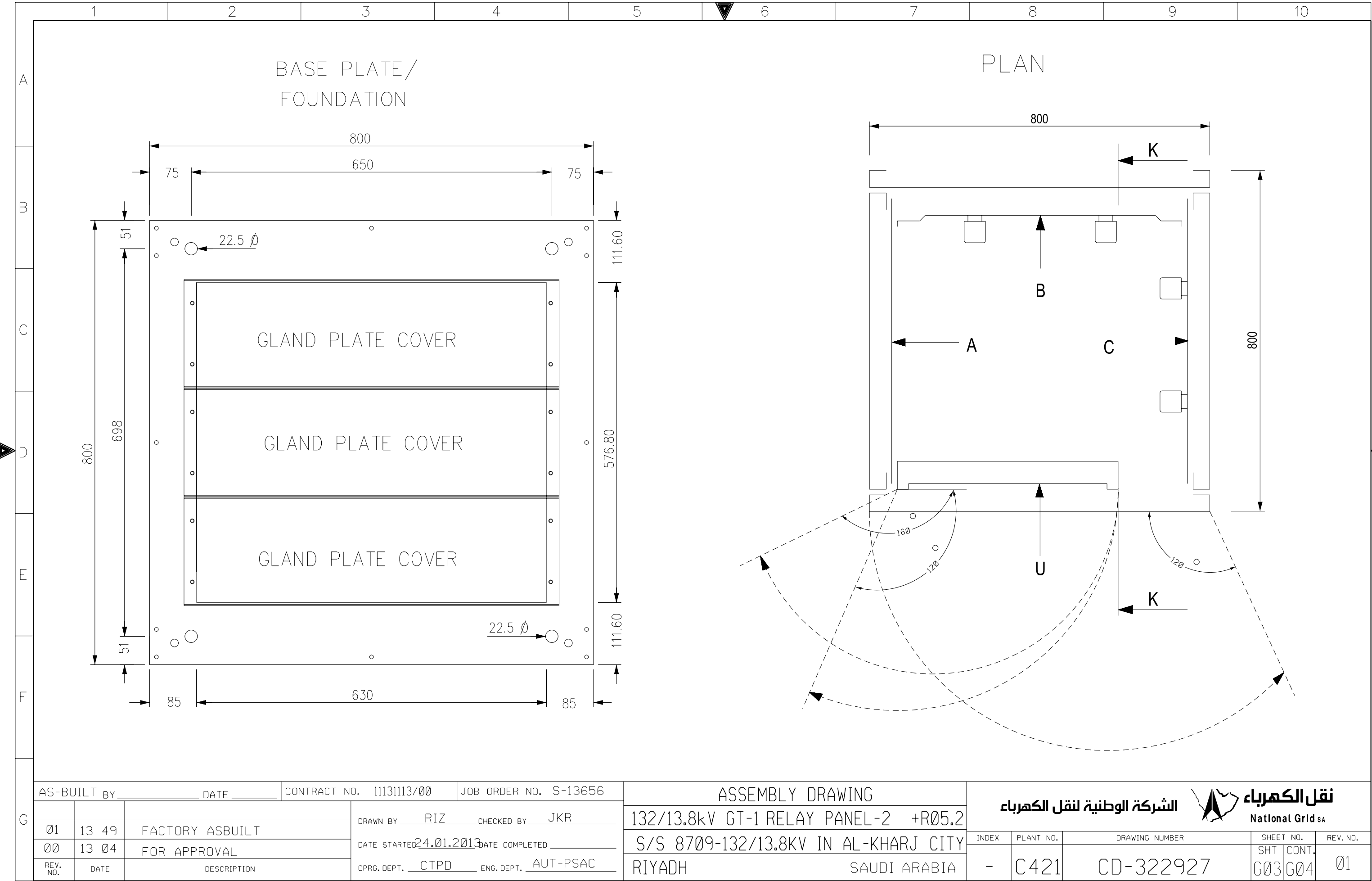
PLANE – B

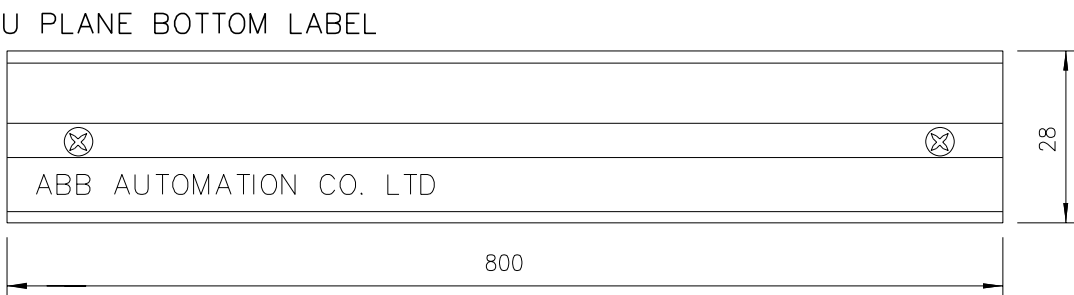
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHOENIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X42	DC EXT. CIRCUITS	M6/8.RS	ENTRELEC
X52,X53	DC PROTN. CIRCUITS	M6/8.RS	ENTRELEC
XD	DC INCOMING CIRCUITS	IN540B	MEJDAF
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

PLANE – C

SCH.REF	DESCRIPTION	TYPE	MAKE
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X62	ALARM CIRCUITS	M6/8.RS	ENTRELEC
X92	SPARE CIRCUITS	M6/8.RS	ENTRELEC

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		 نقل الكهرباء National Grid sa				
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	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322927		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA						G02	G03	





MANUFACTURING LABEL



PROJECT	:	National Grid SA S/S 8709
ORDER REFERENCE	:	2875 RF S13656
YEAR OF MANUFACTURE:	:	2013
PANEL NO.	:	+R05.2
DRAWING NO.	:	S13656-CD-323928

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
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			DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>
01	13 49	FACTORY ASBUILT	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____
00	13 04	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>

ASSEMBLY DRAWING

132/13.8kV GT-1 RELAY PANEL-2 +R05.2
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S/S 8709-132/13.8KV IN AL-KHARJ CITY
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RIYADH	SAUDI ARABIA
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## الشركة الوطنية لنقل الكهرباء







INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322927	SHT	CONT.	01
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	10			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT	416	3	S282 UC K6 S2-H02	ABB	GHS S282 0164 R0317 GH S270 191 6R0003																																																																																																																	
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		U39.5002	Q2	R3€ SUPPLY																																																																																																																						
	U36.5001	Q3	TC2 SUPPLY																																																																																																																							
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B	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	13		X1	BLOT CONNECTING TERMINAL BLOCKS DISCONNECTIBLE FOR CT CIRCUITS		502	45	OTTA 6T P/P	PHOENIX	0790462
			X2	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR VT CIRCUITS		502	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
C			X3	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		502	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X42	SPRING LOADED TERMINAL BLOCK FOR DC EXT. CIRCUITS		502	20	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X52	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		502	90	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
D			X6	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		502	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X62	KNIFE TYPE TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		502	20	M6/8.SNB	ENTRELEC	1SNA 115 688 R2500
			XTJ	SPRING LOADED TERMINAL BLOCK KNIFE FOR TELEPHONE JACK		502	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
E			XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER		502	3	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			XD	TERMINAL BLOCKS WITH BLOCKING DIODE, Vrrm=1kV, If=3A AND SURGE TRAP, ENERGY ABSORPTION RATING 8J (10/1000mS)		436	10	M4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270
			X92	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR SPARE CONTACTS		502	20	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
F			X53	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		502	25	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
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							- C421 CD-322927		L04 L05 01	

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B																																																																						
C	CONTRACTOR : ABB Contracting Company																																																																					
	CLIENT : National Gridsa																																																																					
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																																					
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NG/D2-D (2012/01)

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









































































































































AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CONTENTS SHEET		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>				
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			132/13.8KV GT-1 RELAY PANEL-1/2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322928	SHT 002	CONT. 011	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA							

NG/D2-D (2012/01)

DMS

VECTOR

NGD200

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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

GRAPHICAL SYMBOLS FOR DIAGRAMS

132/13.8KV GT-1 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322928	SHT	CONT.	01
			011	012	

NG/D2-D (2012/01)

DMS VECTOR NGD200

A

B

C

D

E

F

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FUSE / LINK		WATTMETER		ELEMENT WITH NEGATED INHIBITING INPUT
	FUSE WITH THE SUPPLY SIDE INDICATED		VARMETER		ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POWER FACTOR METER		ELEMENT WITH POSTPONED OUTPUT
	SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POSITION INDICATOR		AND-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE		SYNCHROSCOPE		OR-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING VOLTMETER		LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2
	SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING WATTMETER		ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		HOUR METER		EXCLUSIVE OR-ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO CORES (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER		LOGIC IDENTITY ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM		MAJORITY ELEMENT WITH THREE INPUTS
	FILTER		ELEMENT WITH STATIC INPUT		NEGATOR
	HIGH-PASS FILTER		ELEMENT WITH STATIC NEGATED INPUT		NAND ELEMENT WITH TWO INPUTS
	BAND-PASS FILTER		ELEMENT WITH STATIC NEGATED OUTPUT		NOR ELEMENT WITH TWO INPUTS
	VOLTMETER		ELEMENT WITH DYNAMIC INPUT		BISTABLE ELEMENT
	AMMETER		ELEMENT WITH DYNAMIC NEGATED INPUT		
			ELEMENT WITH INHIBITING INPUT		

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

GRAPHICAL SYMBOLS FOR DIAGRAMS

132/13.8KV GT-1 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
			SHT	CONT.	
-	C421	CD-322928	012	013	01

NG/D2-D (2012/01)

DMS

VECTOR

NGD200



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LEGENDS

±R1	DC SUPPLY – MAIN PROTECTION
±R2	DC SUPPLY – SECONDARY PROTECTION
±R3	DC SUPPLY – BACK UP PROTECTION
±IT	DC SUPPLY – INTER TRIP
FL	DC SUPPLY – FLASHING CIRCUIT
BB RS±	DC SUPPLY – BUS BAR – PROTECTION RESET
BB CBF± /CBF±	DC SUPPLY – CBF PROTECTION
R	RESET BUS – ALARM SYSTEM
CR	CONTROL ROOM
ECC	ENERGY CONTROL CENTRE
LOCAL	THE LOCATION OF CONTROLLED DEVICE
REMOTE	ANY OTHER LOCATION NOT LOCAL
ON	CB NORMALLY OPEN AUXILIARY CONTACT
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT
A	COMMON
T	TEST POSITION
S	SERVICE POSITION
CS	CLOSE IN SERVICE POSITION
CT	CLOSE IN TEST POSITION
LS	LOCAL SERVICE
LT	LOCAL TEST
LC	LOCAL CLOSE
LO	LOCAL OPEN
RO	REMOTE OPEN
OP	OPERATE
RE	RESET

NOTES

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING

PVC INSULATED 600V GRADE  
2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS  
2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS  
1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS  
2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS  
2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS  
FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:  
+ SIGN FOR DC + WIRE  
– SIGN FOR DC – WIRE

LUGS

A. CT CIRCUITS– RING TYPE  
B. OTHER CIRCUITS – SPADE TYPE

FERULLING

YELLO TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES ( AS PER 31 – TMSS–1, RE.0 )

A

B

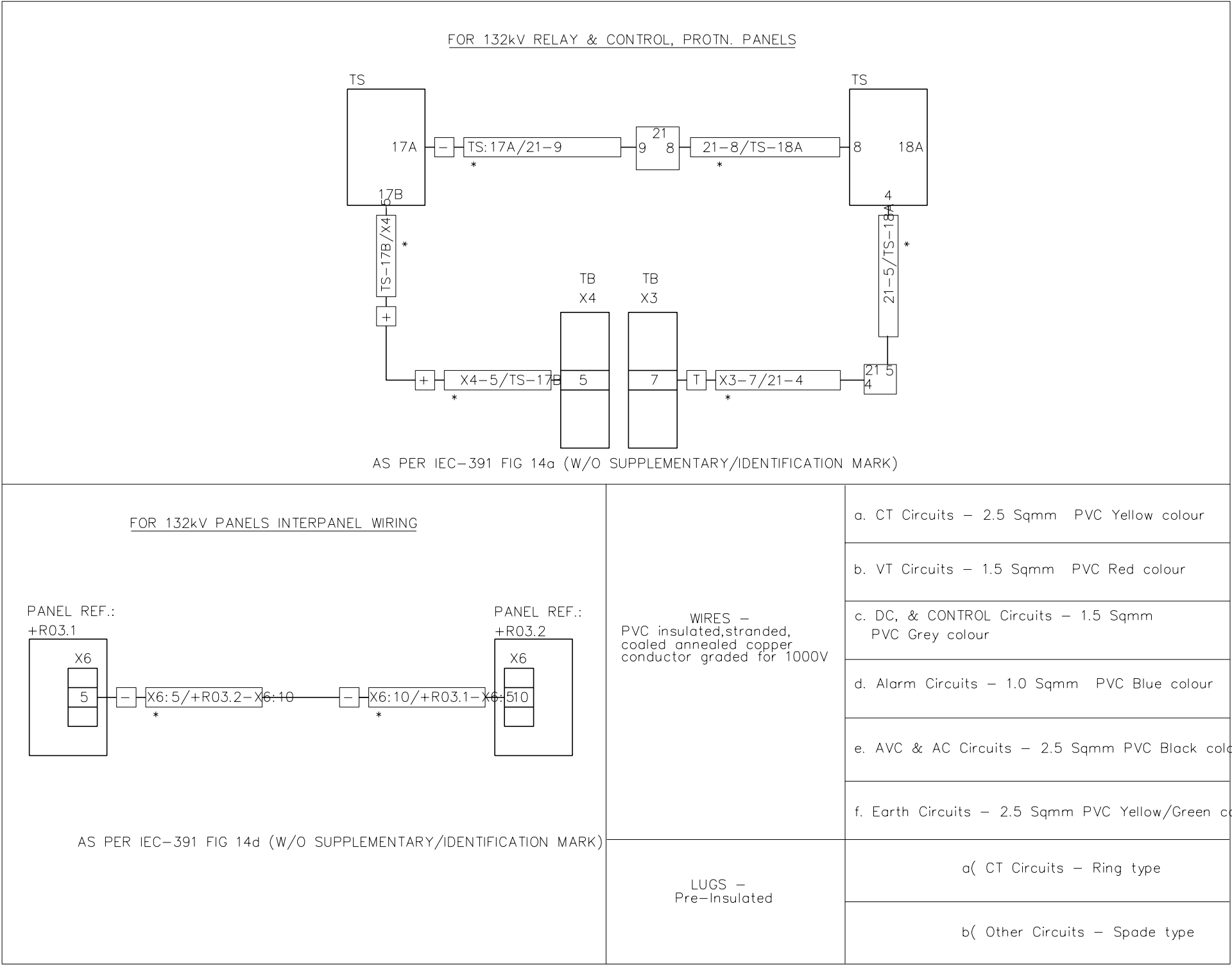
C

D

E

F

G



NOTE:1 ADDITIONAL MARKING AS APPLICABLE

NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE

3.2 mm for 1.5 sq mm wires and

4.2 mm for 2.5 sq mm wires

( As per 31-TMSS-1, REV 0 )

NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

FERRULE AND WIRING DETAILS	
132/13.8KV GT-1 RELAY PANEL-1/2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء			 <b>نقل الكهرباء</b> National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322928	SHT 014	CONT. 015	01

1		2		3		4		5		6		7		8		9		10											
A		<div><div><div>ABB</div><div>PROTECTION &amp; SUBSTATION AUTOMATION</div></div></div>																		MANUFACTURER		SCHEMATICS DWG.NO		PANEL DESCRIPTION				PANEL REFERENCE	
B																								SS 8709 132kV RELAY PANELS					
B																				CD-322928				132/13.8kV GT-1 RELAY PANEL -1				+R05.1	
																								132/13.8kV GT-1 RELAY PANEL -2				+R05.2	
B																				CD-322931				132/13.8kV GT-2 RELAY PANEL -1				+R01.1	
																								132/13.8kV GT-2 RELAY PANEL -2				+R01.2	
B																				CD-322934				132/13.8kV GT-3 RELAY PANEL -1				+R04.1	
																								132/13.8kV GT-3 RELAY PANEL -2				+R04.2	
B																				CD-322936				132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL				+AVC	
C																				CD-322922				132KV SPARE-1 UGF RELAY PANEL -1				+R07.1	
																								132KV SPARE-1 UGF RELAY PANEL -2				+R07.2	
C																				CD-322916				132KV 8020 UGF RELAY PANEL -1				+R02.1	
																								132KV 8020 UGF RELAY PANEL -2				+R02.2	
C																				CD-322919				132KV 8710 UGF RELAY PANEL -1				+R05.1	
																								132KV 8710 UGF RELAY PANEL -2				+R05.2	
C																				CD-322925				132KV SPARE-2 UGF RELAY PANEL -1				+R06.1	
																								132KV SPARE-2 UGF RELAY PANEL -2				+R06.2	
D																				CD-323012				132KV FOIP PANEL				+FOIP	
D																				CD-322946				132kV BUS COUPLER-A				+R130	
D																				CD-322948				132kV BUS COUPLER-B				+R230	
D		CD-322950				132kV BUS SECTION				+R120																			
E		CD-322991				132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL				+BB1-1																			
E		CD-322993				132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL				+BB1-2																			
E		CD-322995				132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL				+BB1-3																			
E		CD-322997				132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL				+BB1-4																			
F		CD-322999				132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL				+BB1-5																			
F		CD-323001				132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL				+BB2-1																			
F		CD-323003				132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL				+BB2-2																			
F		CD-323005				132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL				+BB2-3																			
F		CD-323007				132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL				+BB2-4																			
F		CD-323009				132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL				+BB2-5																			
G		AS-BUILT BY _____ DATE _____				CONTRACT NO. 11131113/00				JOB ORDER NO. S-13656				DRAWING REFERENCES				<div><div><div>الشركة الوطنية لنقل الكهرباء</div><div>نقل الكهرباء</div><div>National Grid SA</div></div></div>											
						DRAWN BY RIZ CHECKED BY JKR				132/13.8KV GT-1 RELAY PANEL-1/2																			
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		00 13 04 FOR APPROVAL				OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC				RIYADH SAUDI ARABIA																			
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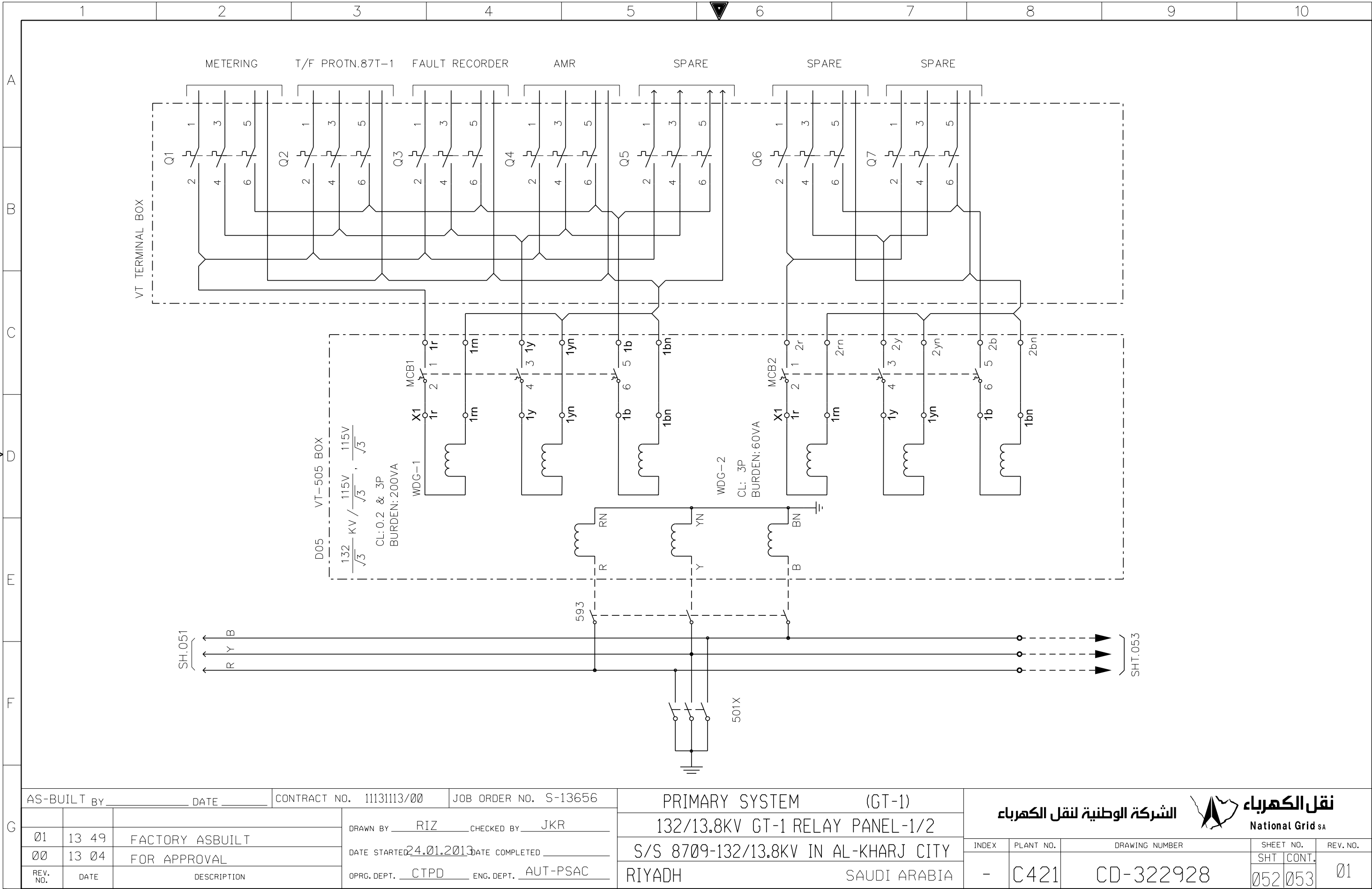
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PROTECTION & SUBSTATION  
AUTOMATION

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00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

PRIMARY SYSTEM (GT-1)
132/13.8KV GT-1 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

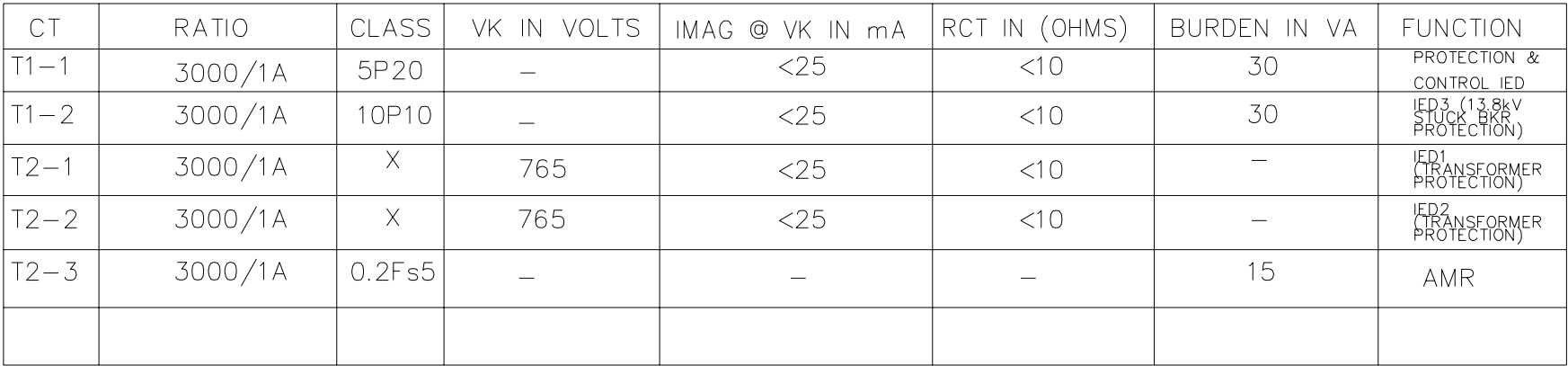
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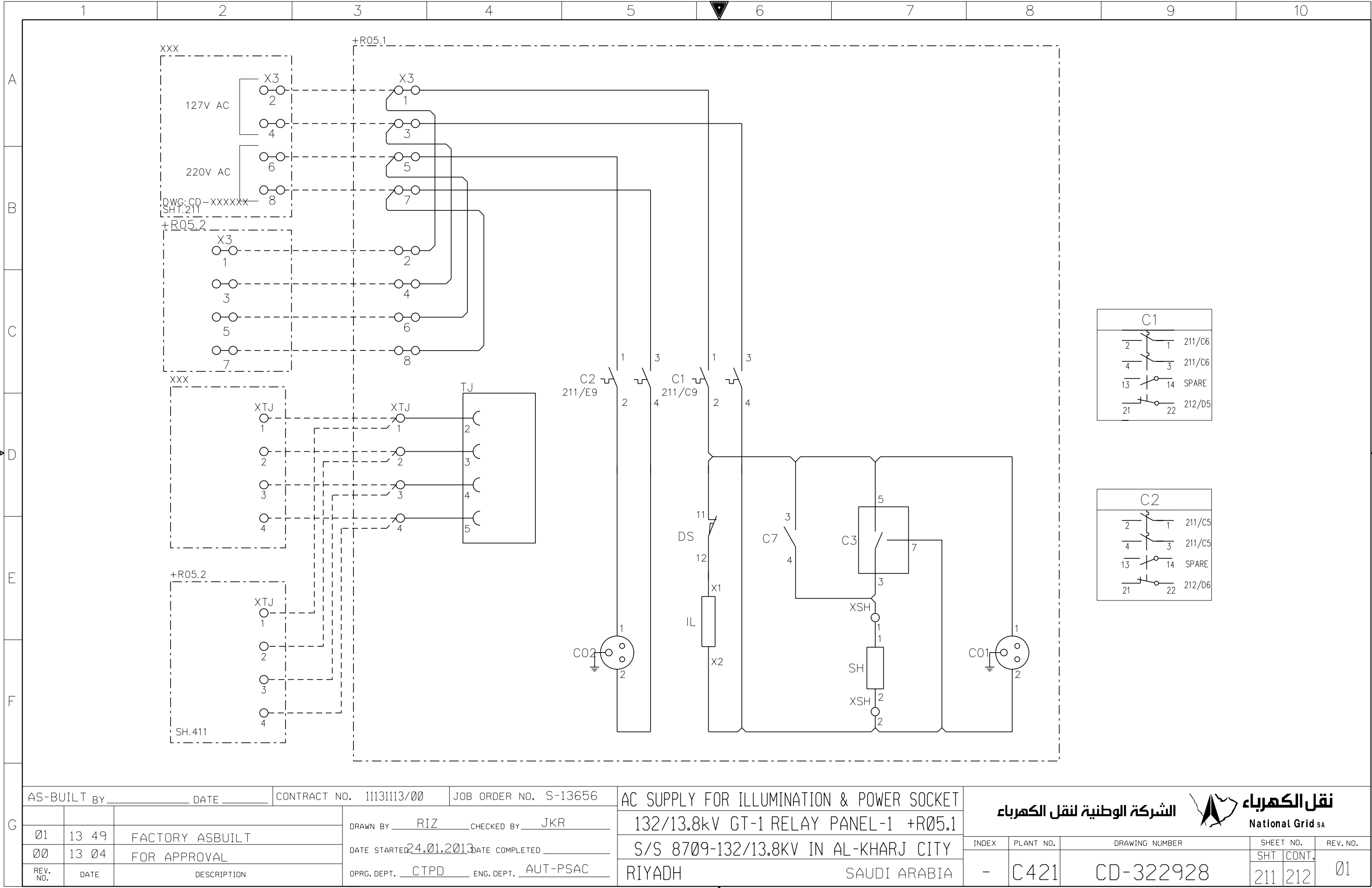




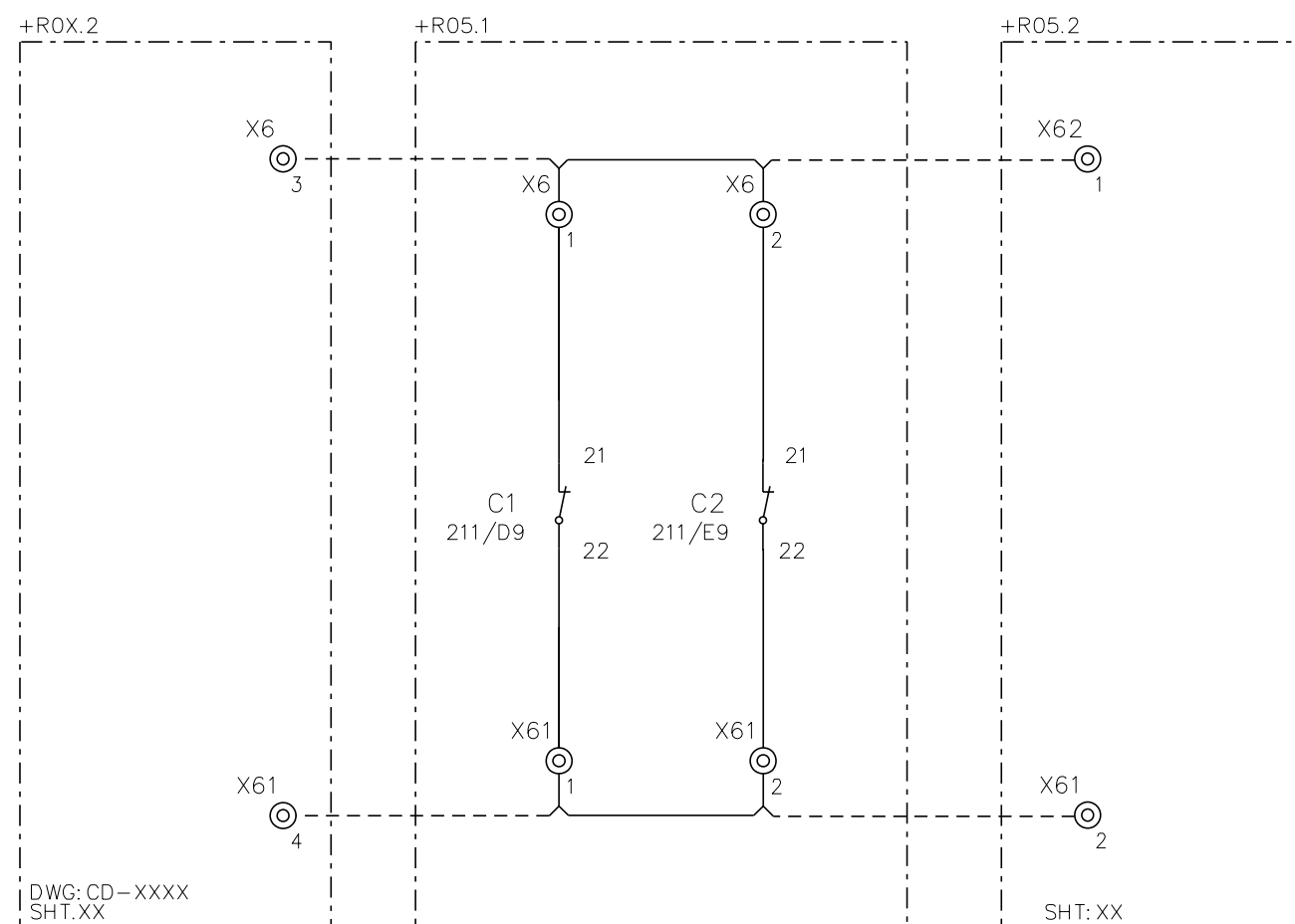


CT	RATIO	CLASS	VK IN VOLTS	IMAG @ VK IN mA	RCT IN (OHMS)	BURDEN IN VA	FUNCTION
T1-1	3000/1A	5P20	—	<25	<10	30	PROTECTION & CONTROL IED
T1-2	3000/1A	10P10	—	<25	<10	30	IED3 (13.8kV STUCK BKR PROTECTION)
T2-1	3000/1A	X	765	<25	<10	—	IED1 (TRANSFORMER PROTECTION)
T2-2	3000/1A	X	765	<25	<10	—	IED2 (TRANSFORMER PROTECTION)
T2-3	3000/1A	0.2Fs5	—	—	—	15	AMR

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		<div> <div>  <div> <div>نقل الكهرباء</div> <div>National Grid sa</div> </div> </div> <div> <div>الشركة الوطنية لنقل الكهرباء</div> </div> </div>					
			DRAWN BY _____ RIZ _____ CHECKED BY _____ JKR		PRIMARY SYSTEM (GT-1)							
Ø1 13 49 FACTORY ASBUILT					132/13.8KV GT-1 RELAY PANEL-1/2							
ØØ 13 Ø4 FOR APPROVAL			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
REV. NO. _____ DATE _____ DESCRIPTION _____			OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC		RIYADH SAUDI ARABIA							
							INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
								C421	CD-322928	SHT 056	CONT. 211	Ø1

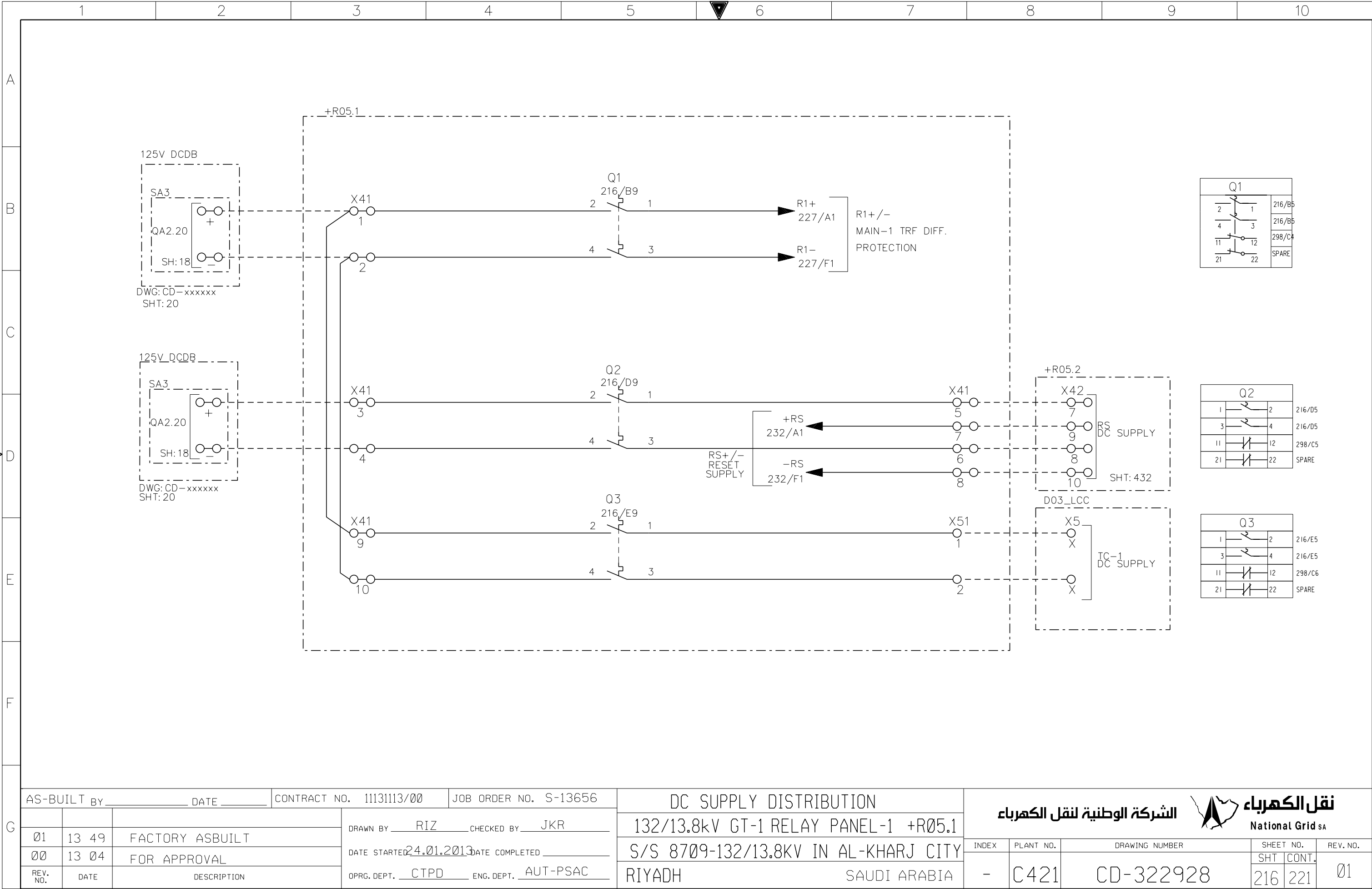


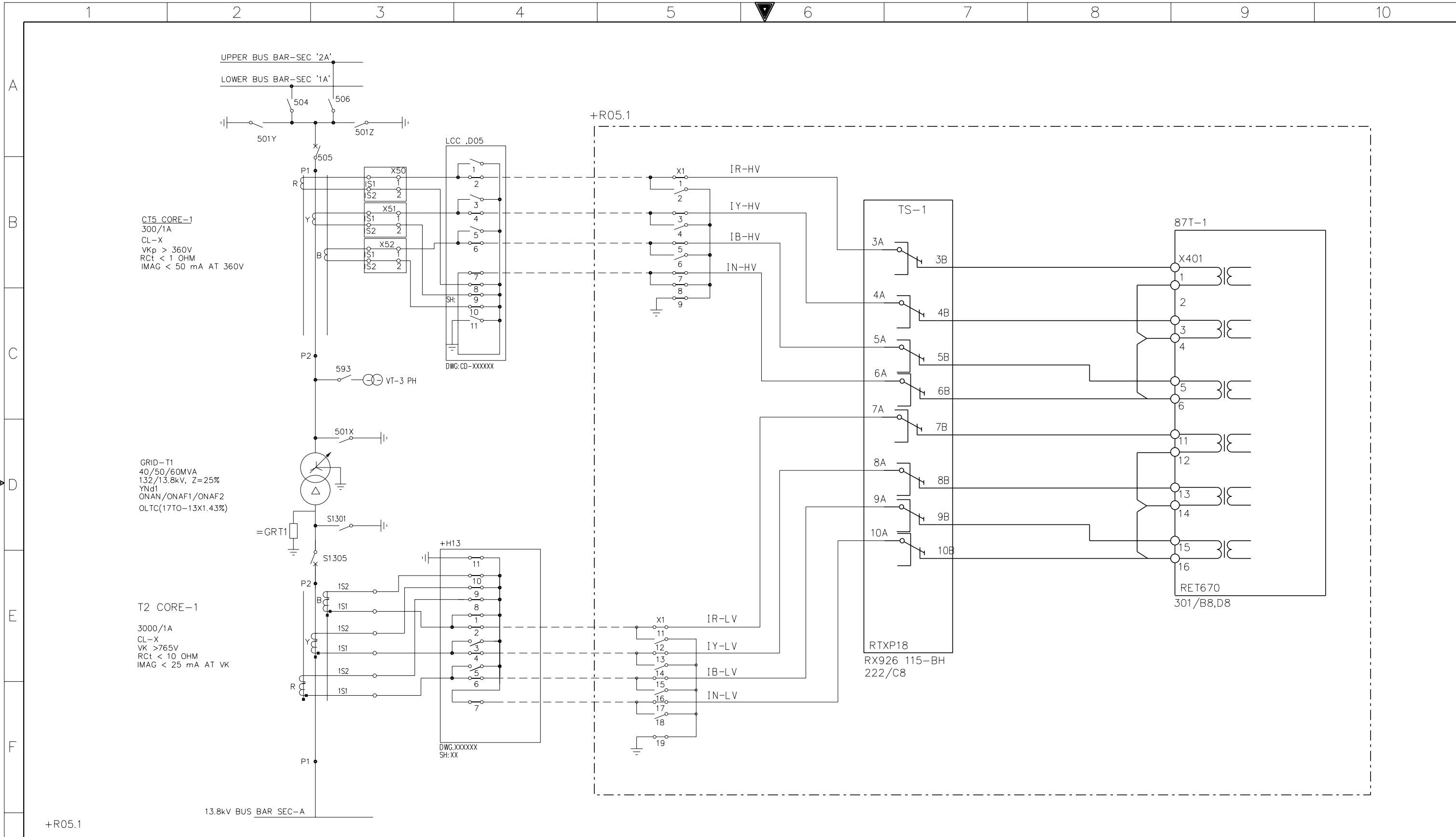
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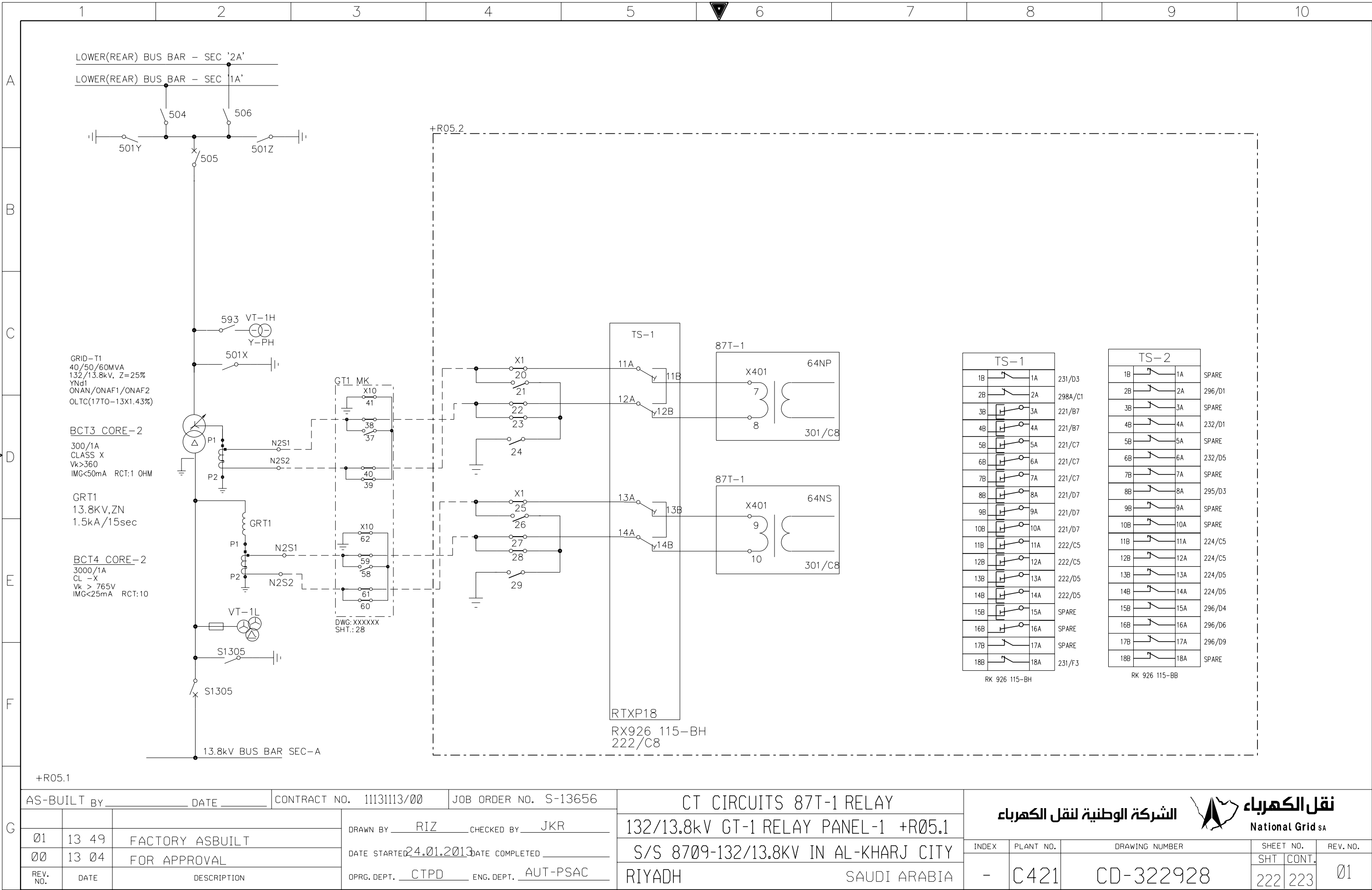
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CUB.LIGHTING,HEATER&SOKET ALARM CKT.	
01	13 49	FACTORY ASBUILT		DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8kV GT-1 RELAY PANEL-1 +R05.1	
00	13 04	FOR APPROVAL		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA	

		<b>نقل الكهرباء</b> National Grid SA		<b>الشركة الوطنية لنقل الكهرباء</b>		
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322928		SHT	CONT.	01
				212	216	

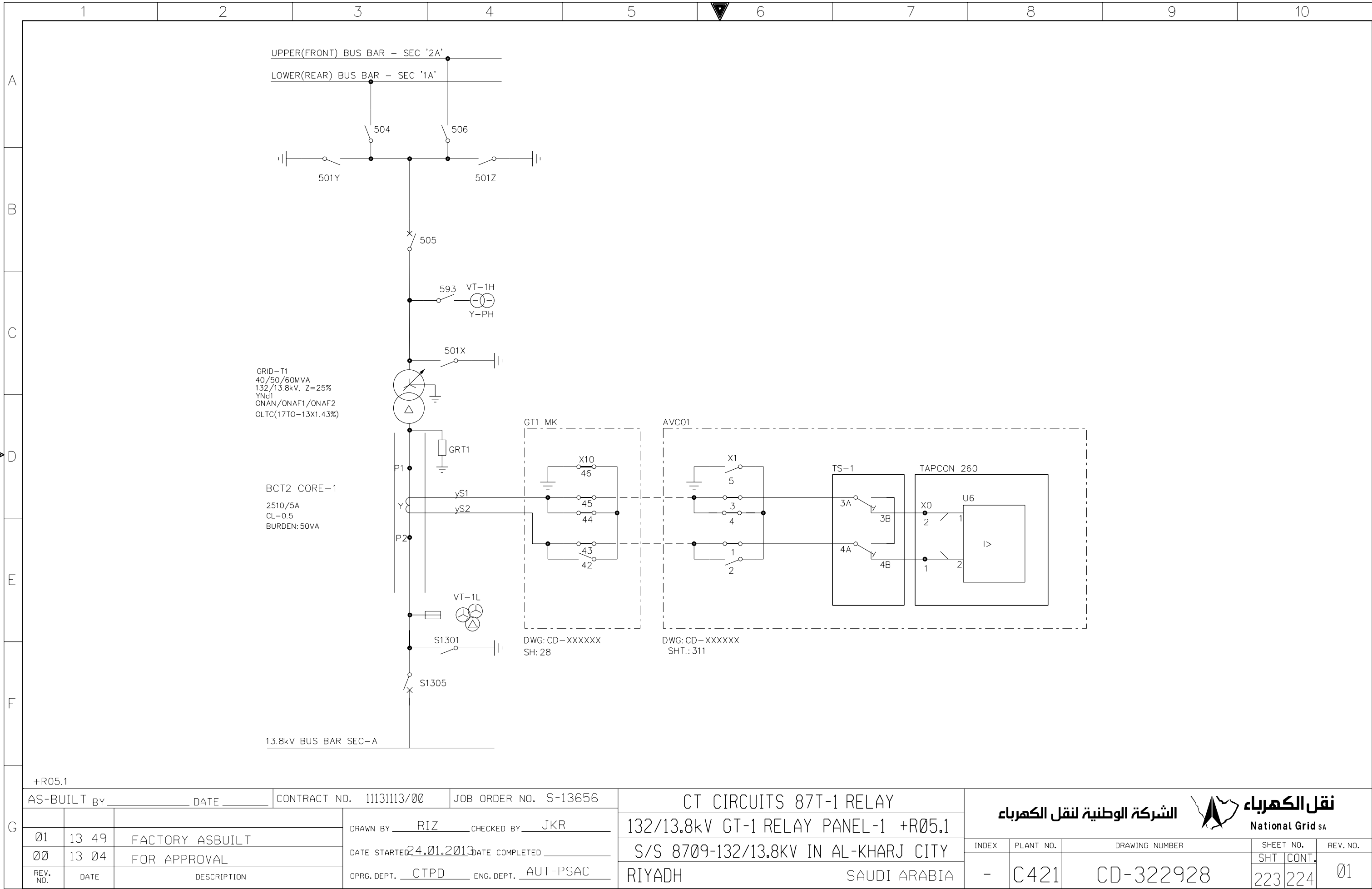




G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CT CIRCUITS 87T-1 RELAY		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
				DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8kv GT-1 RELAY PANEL-1 +R05.1									
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+R05.1

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

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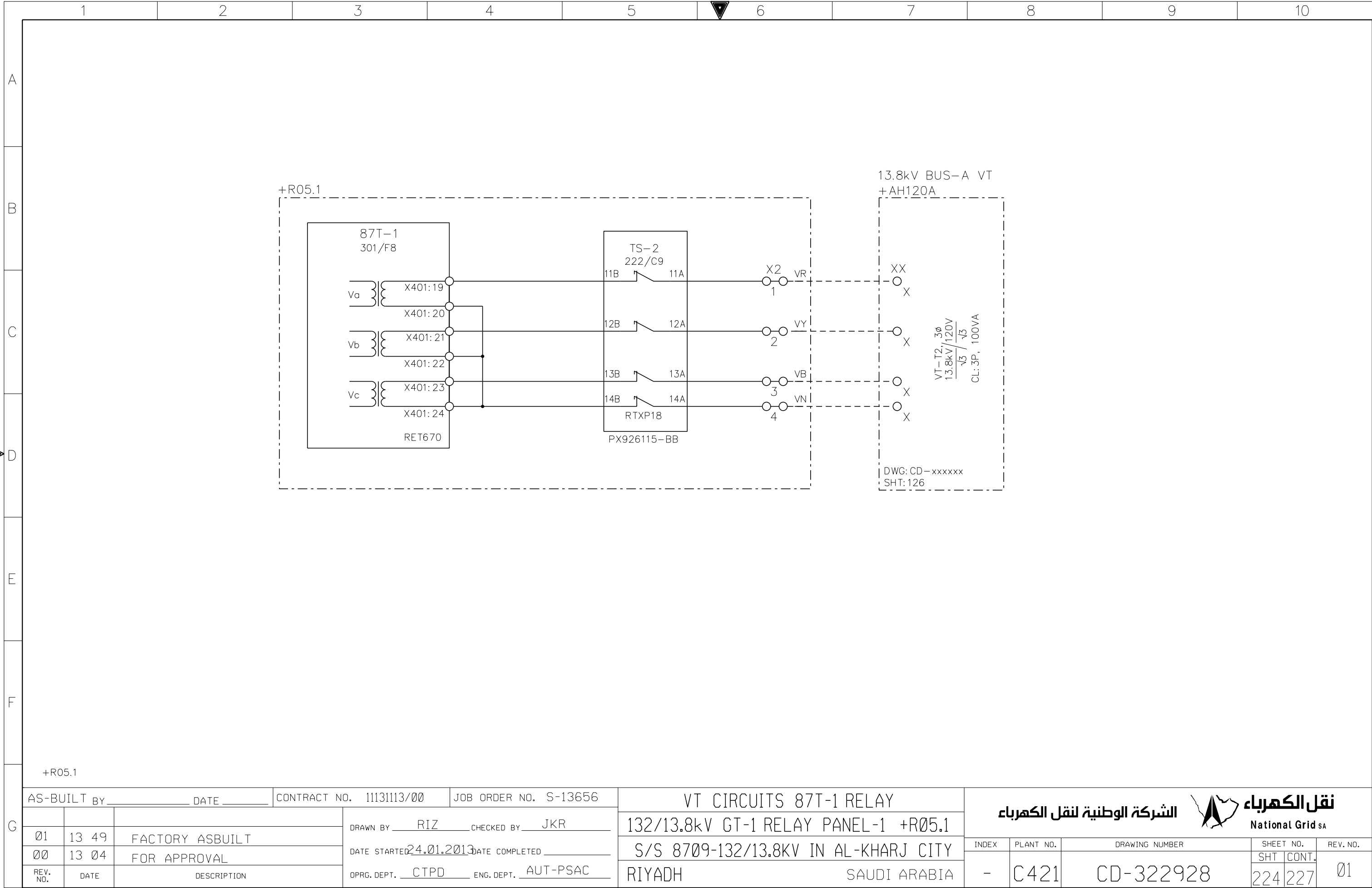
CT CIRCUITS 87T-1 RELAY  
132/13.8kV GT-1 RELAY PANEL-1 +R05.1  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
-	C421	CD-322928	SHT	CONT.
			223	224
				01

NG/D2-D (2012/01)

DMS VECTOR NGD200





+R05.1

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01

13 49

FACTORY ASBUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ CHECKED BY JKR

DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

VT CIRCUITS 87T-1 RELAY

132/13.8kV GT-1 RELAY PANEL-1 +R05.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

 **نقل الكهرباء**  
National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

SHT

CONT.

REV. NO.

-

C421

CD-322928

224

227

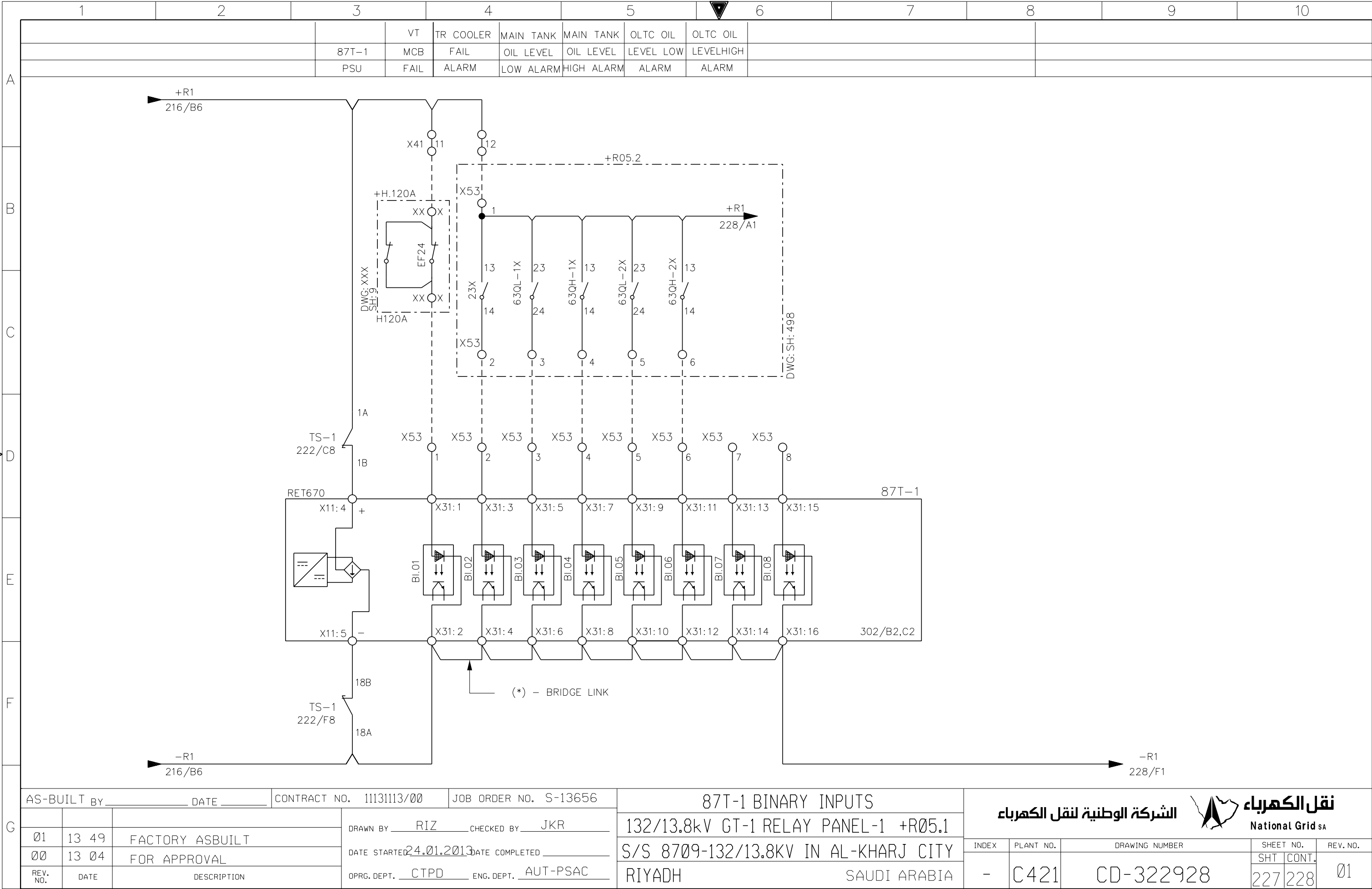
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NG/D2-D (2012/01)

DMS

VECTOR

NGD200

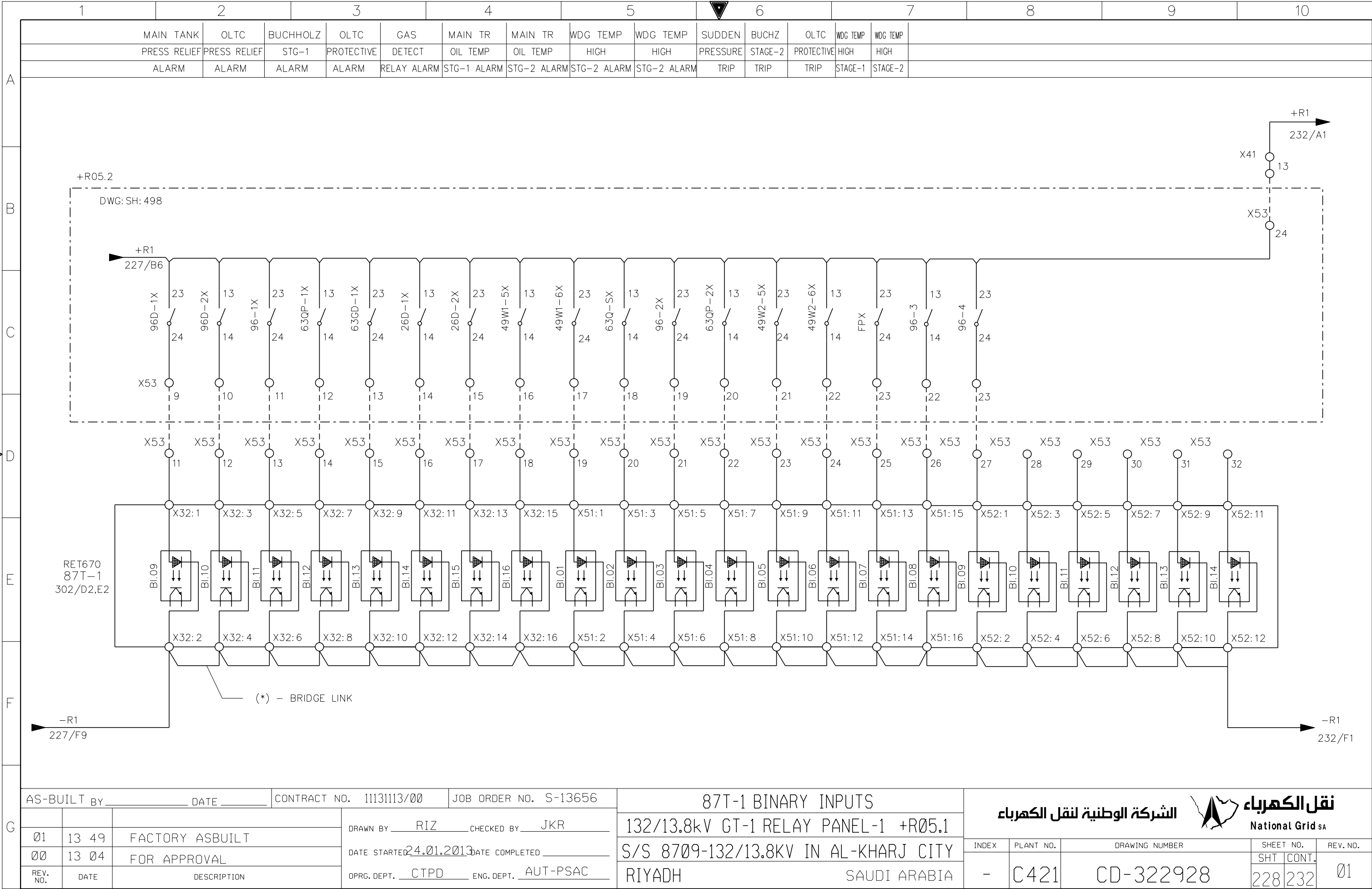


AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

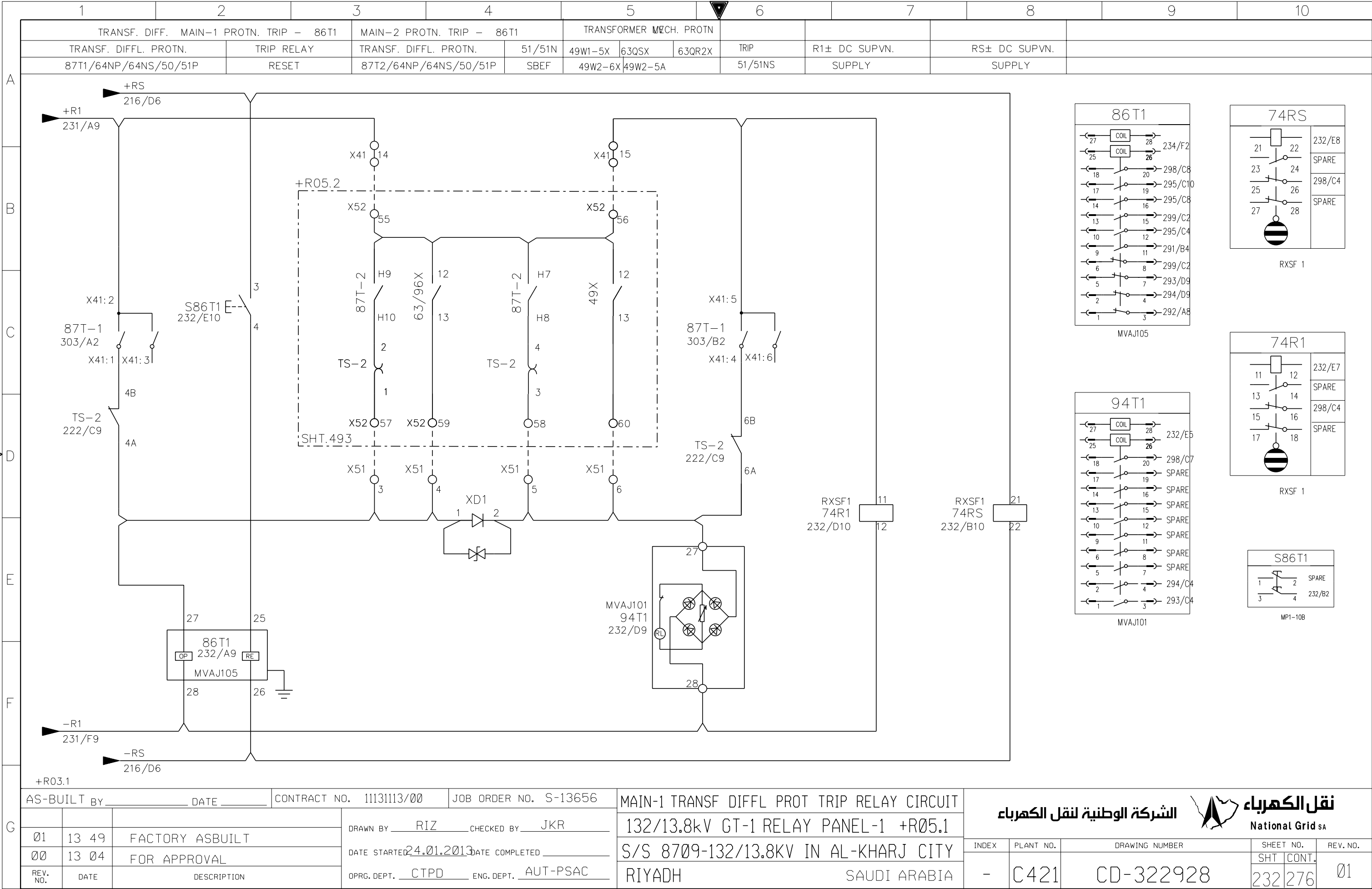
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

87T-1 BINARY INPUTS  
132/13.8kV GT-1 RELAY PANEL-1 +R05.1  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322928	SHT 227	CONT. 228
			01	

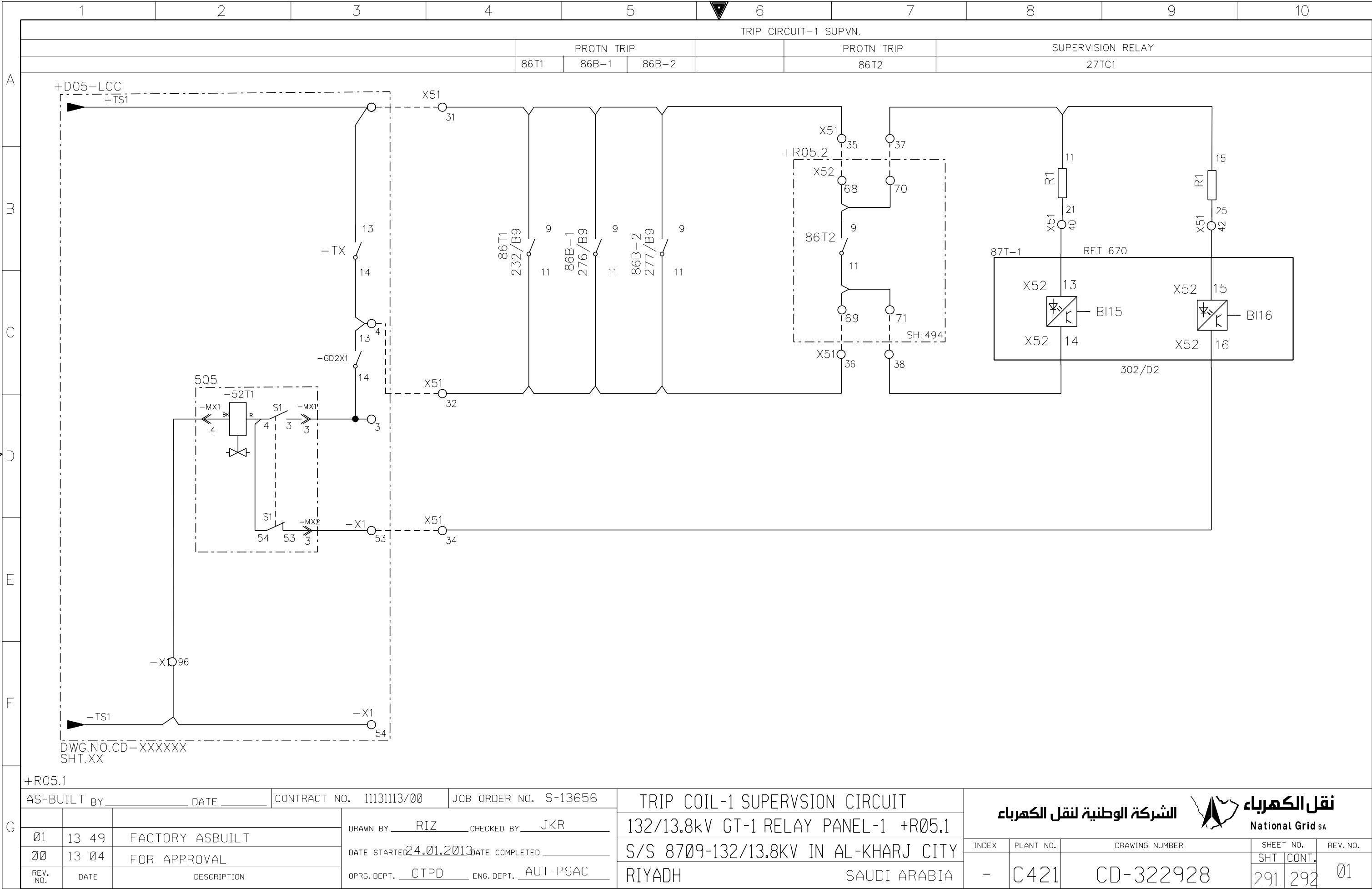


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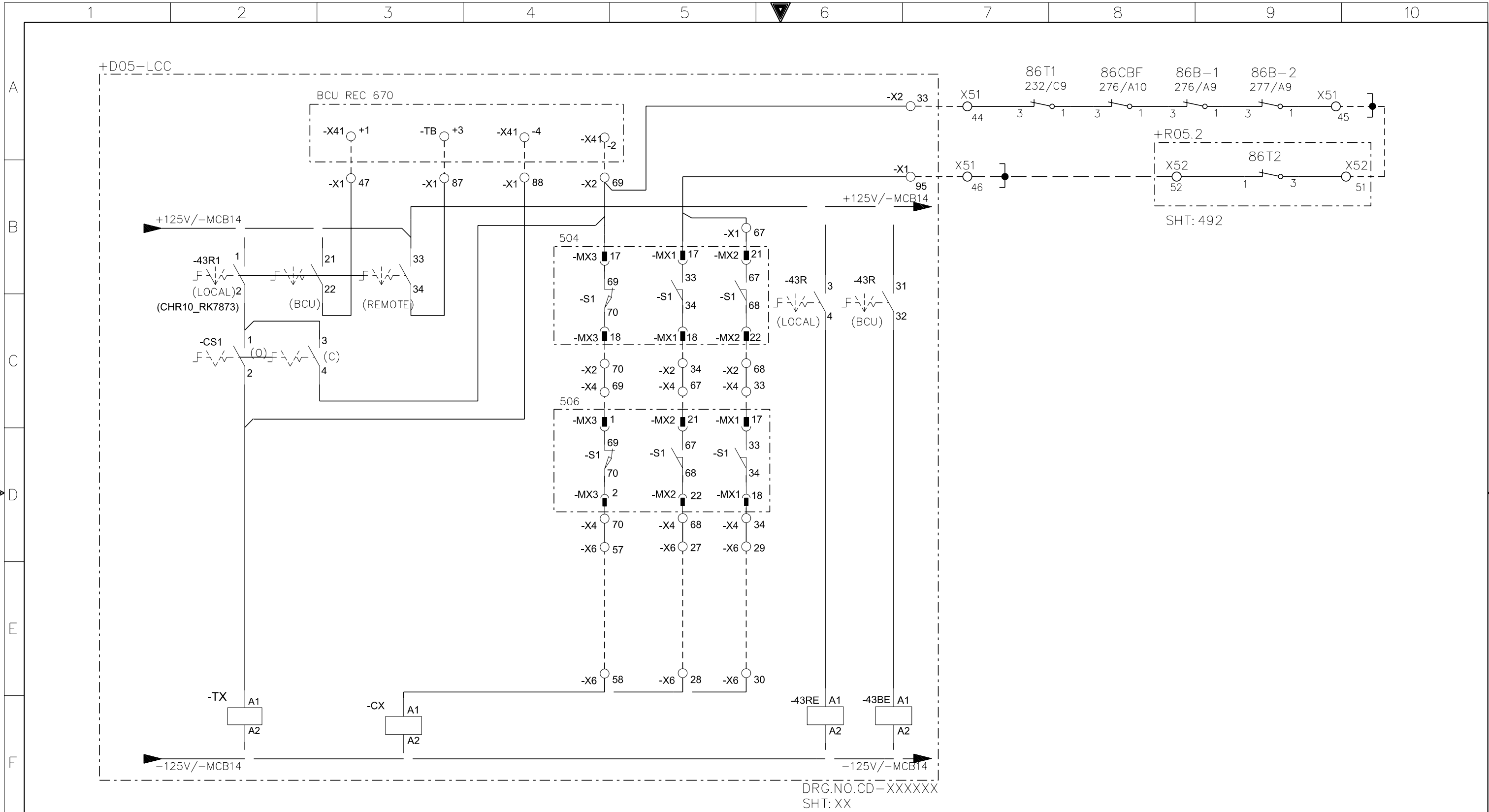









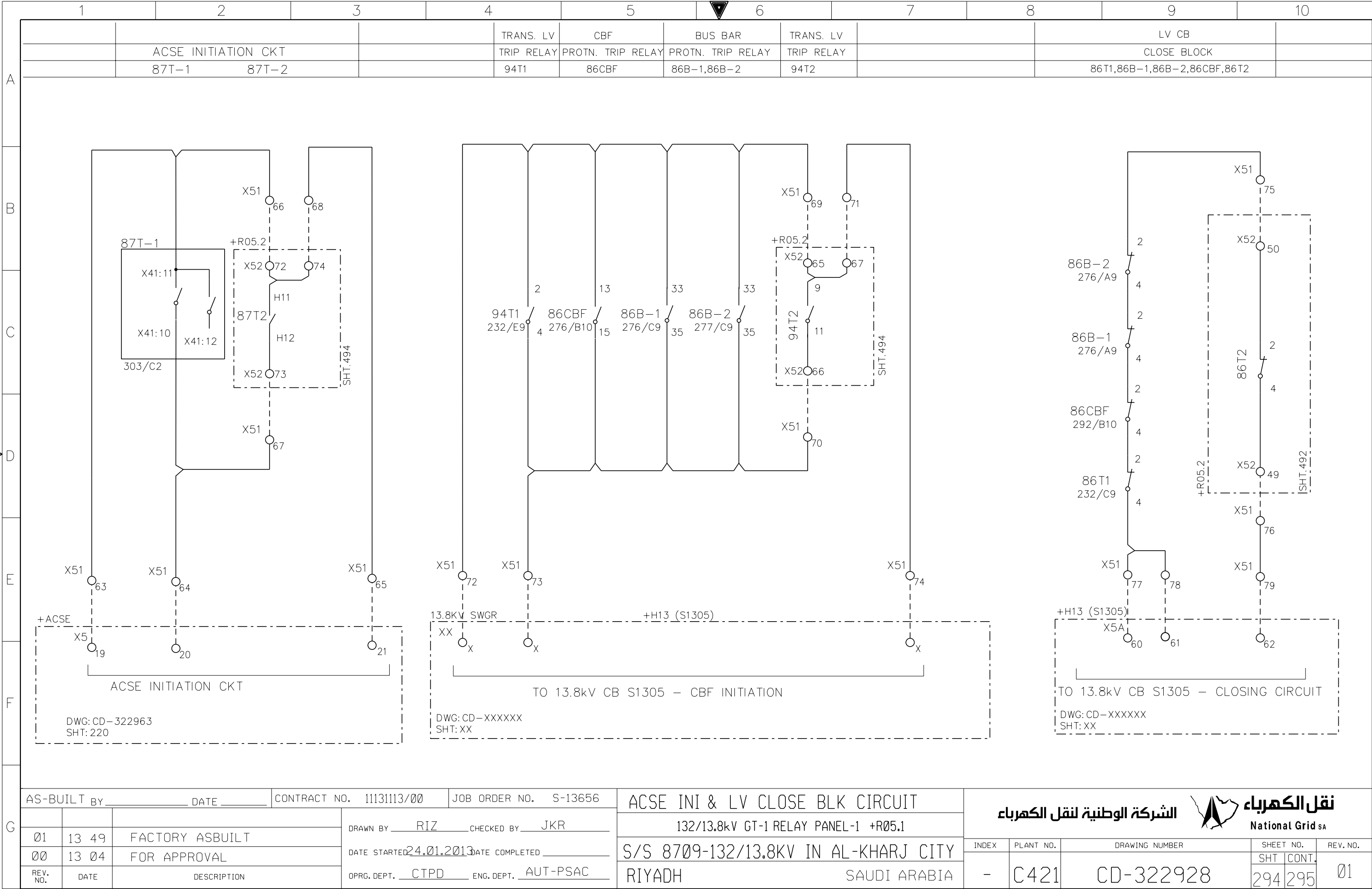
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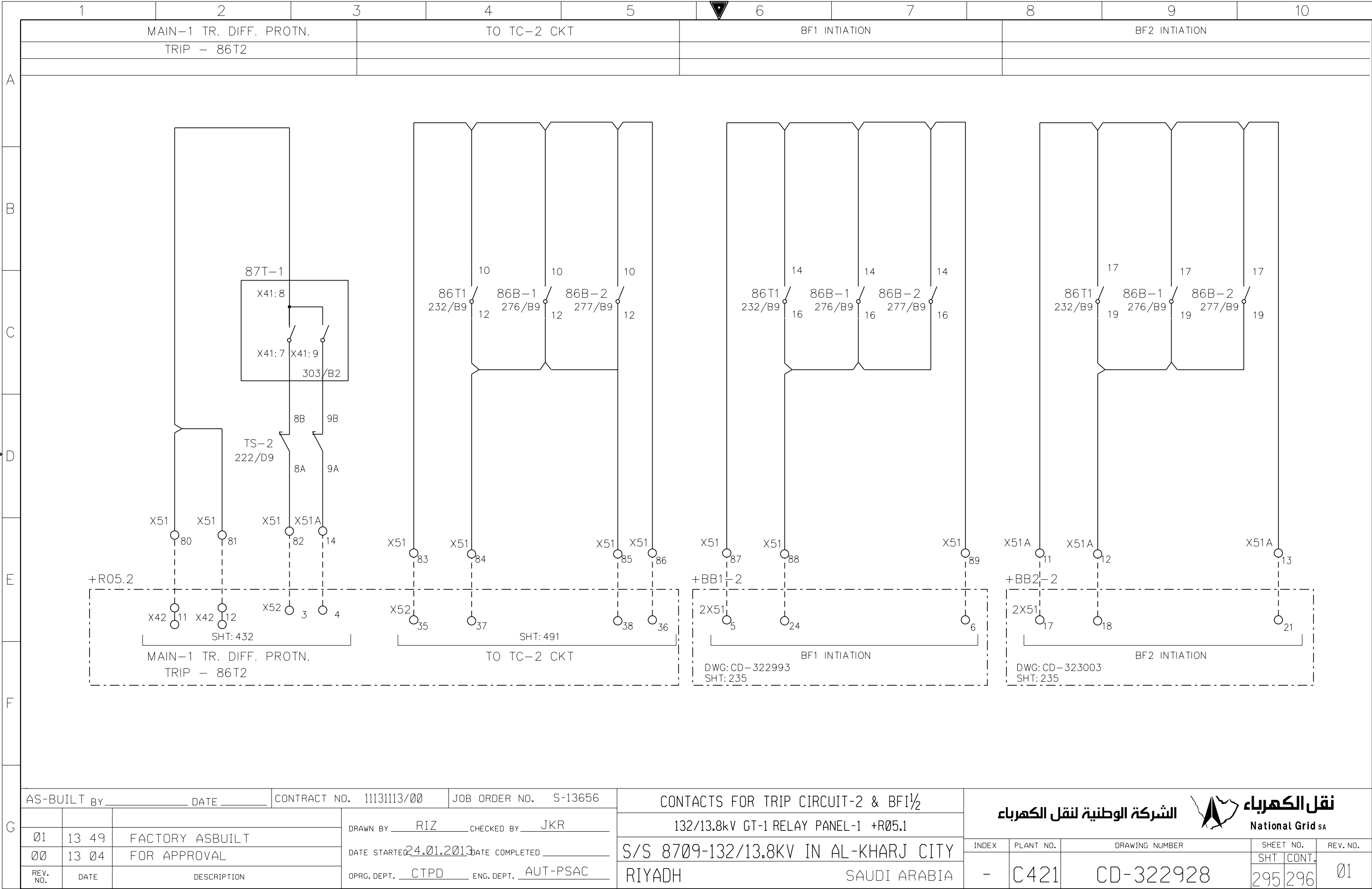
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CB K305 CLOSE BLOCK CIRCUIT		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء National Grid SA</div>				
				DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>	132/13.8kV GT-1 RELAY PANEL-1 +R05.1								
	01	13 49	FACTORY ASBUILT	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
	00	13 04	FOR APPROVAL	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD-322928	SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION								292	293	



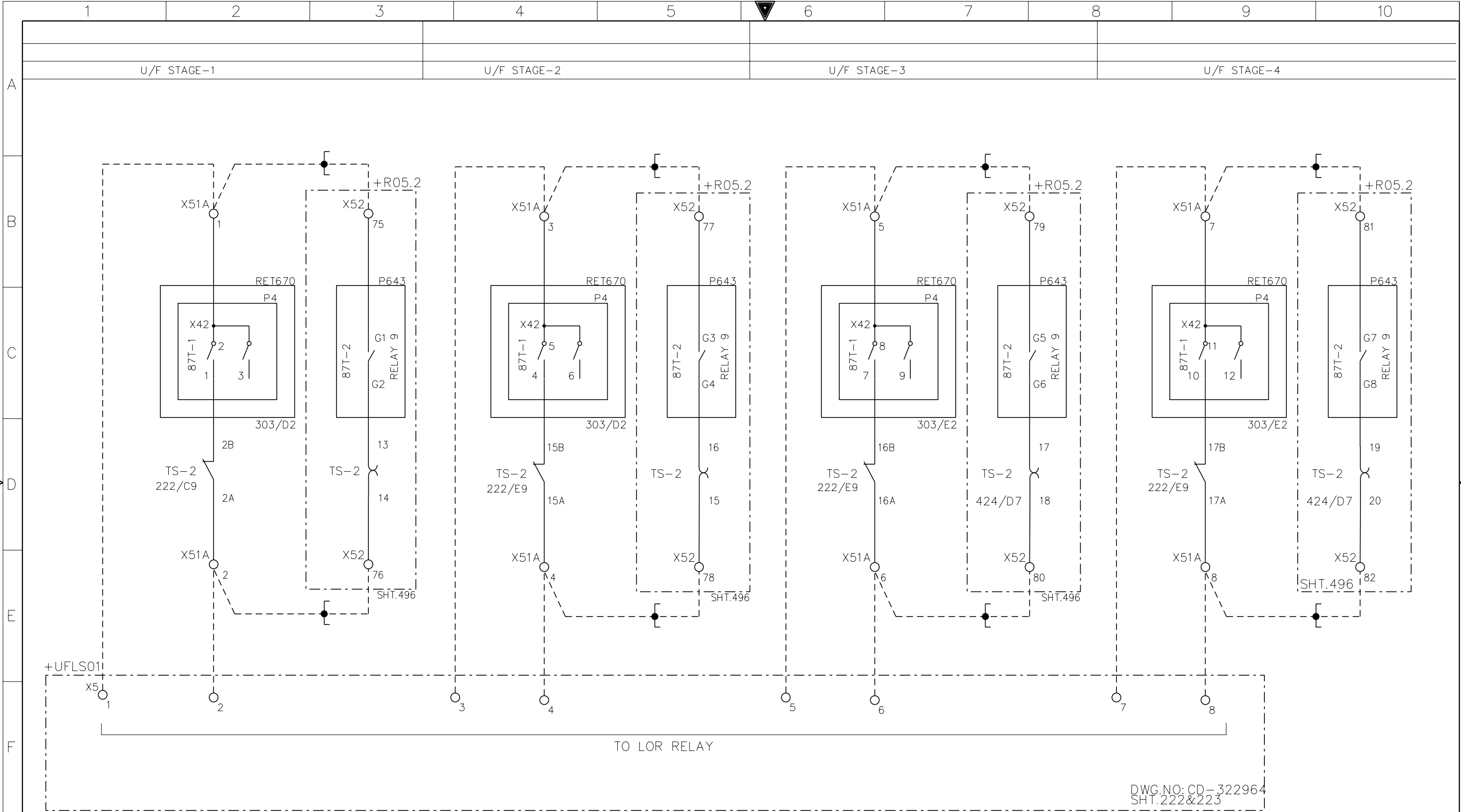
[illegible]



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ACSE INI & LV CLOSE BLK CIRCUIT		<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>						
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY JKR		132/13.8kv GT-1 RELAY PANEL-1 +R05.1								
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY								
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
									-	C421	CD-322928		SHT 294	CONT. 295	01



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G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

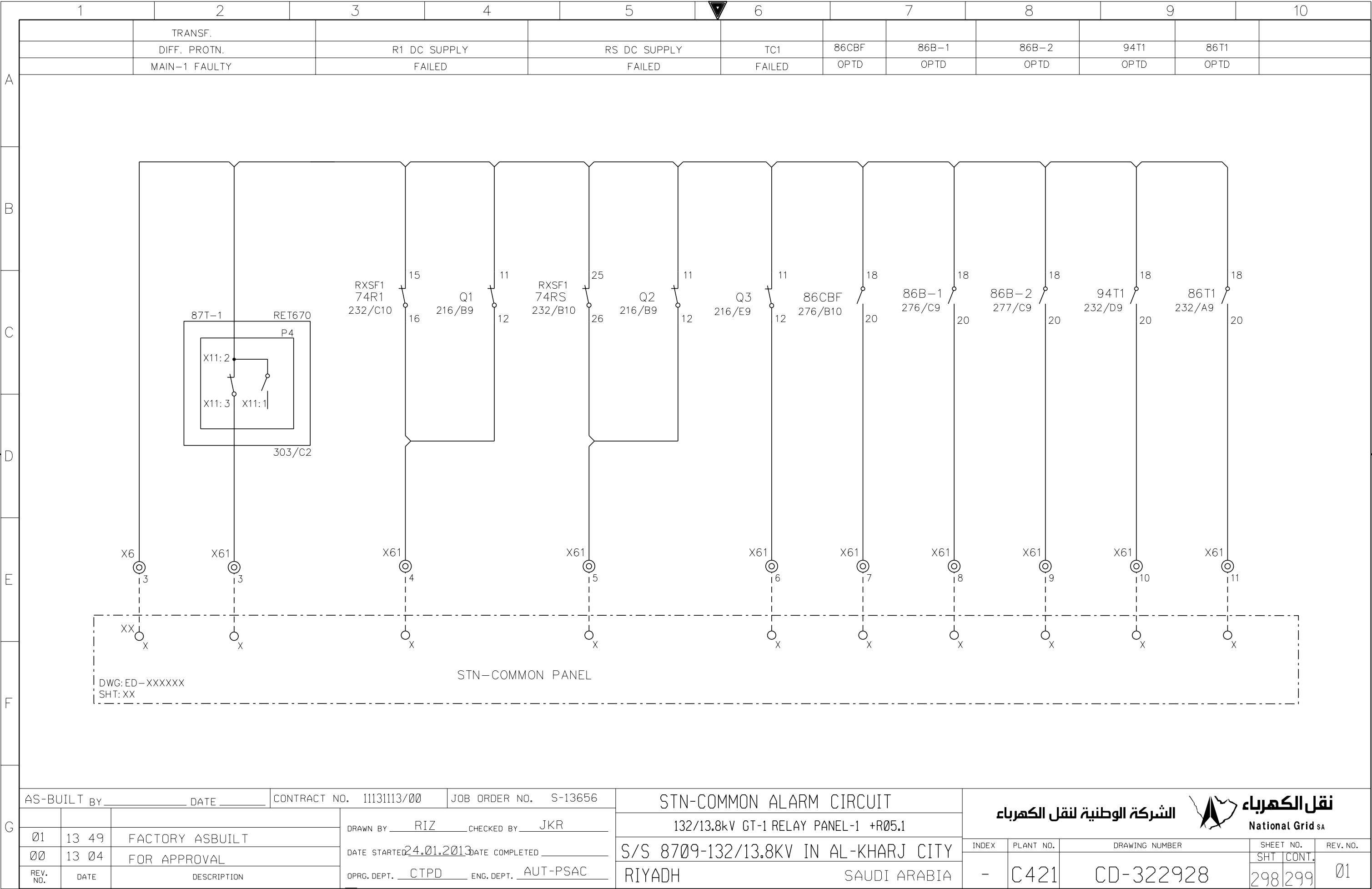
CONTACTS FOR U/F LOAD SHEDDING					
132/13.8kV GT-1 RELAY PANEL-1 +R05.1					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					

الشركة الوطنية لنقل الكهرباء



National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
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G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

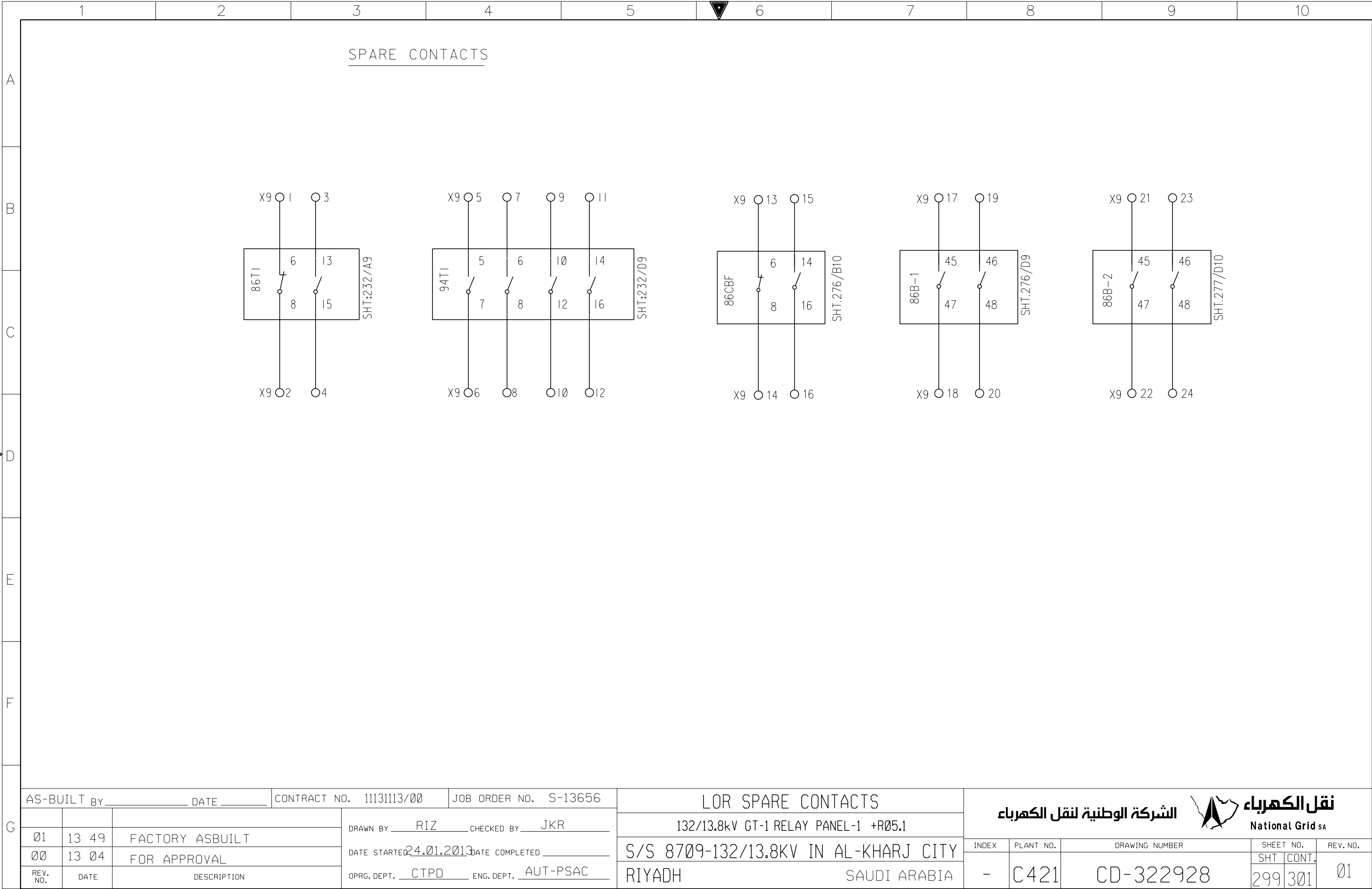
STN-COMMON ALARM CIRCUIT					
132/13.8kV GT-1 RELAY PANEL-1 +R05.1					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322928	SHT 298	CONT. 299	01



AS-BUILT BY

DATE

CONTRACT NO.

11131113/00

JOB ORDER NO.

S-13656

01

13 49

FACTORY ASBUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY

RIZ

CHECKED BY

JKR

DATE STARTED

24.01.2013

DATE COMPLETED

OPRG. DEPT.

CTPD

ENG. DEPT.

AUT-PSAC

LOR SPARE CONTACTS

132/13.8kV GT-1 RELAY PANEL-1 +R05.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

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-

C421

CD-322928

299/301

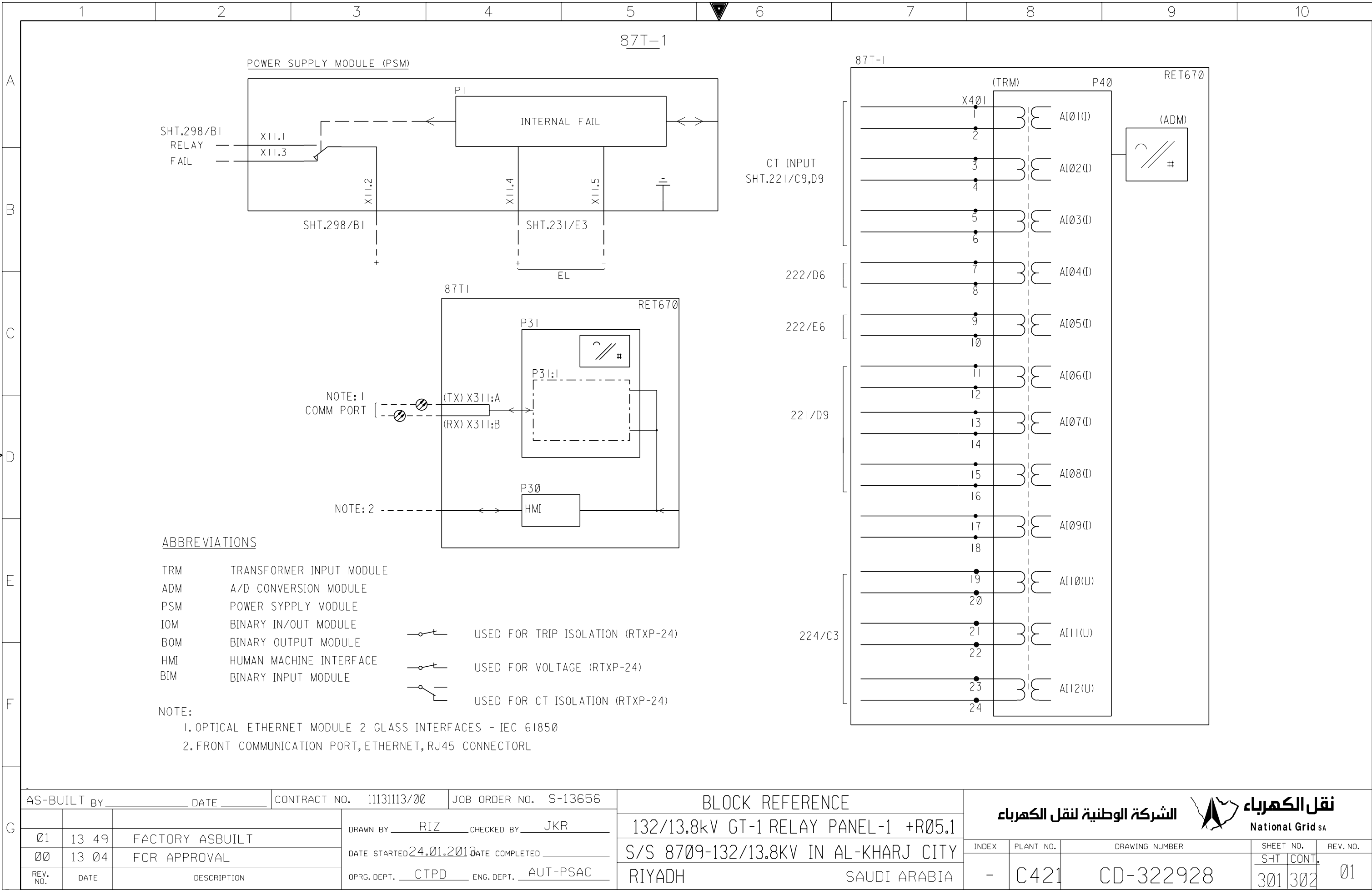
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NG/D2-D (2012/01)

DMS

VECTOR

NGD200



	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		BLOCK REFERENCE		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء
01 13 49		FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-1 RELAY PANEL-1 +R05.1		INDEX		PLANT NO.
00 13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		- C421		CD-322928
						RIYADH SAUDI ARABIA		302 303		01

BINARY INPUT CARD

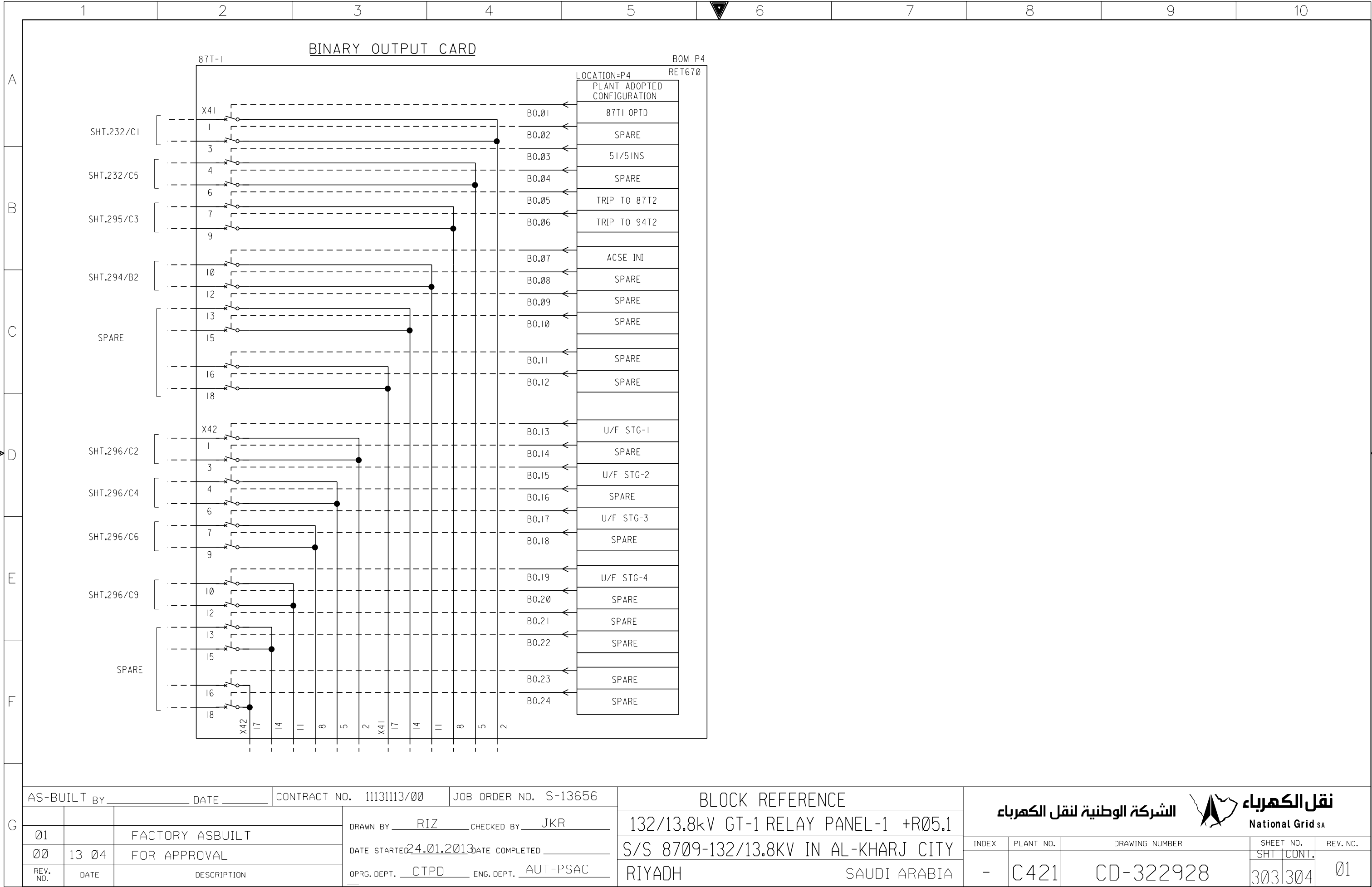
87T-1		BIM P3	
		RET670	
		LOCATION=P3	
		PLANT ADAPTED CONFIGURATION	
SHT.227/E3	+ ---	X31	
	- ---	1	BI.01 // VT MCB FAIL
	+ ---	2	BI.02 // SPARE
	- ---	3	BI.03 // SPARE
	+ ---	4	BI.04 // SPARE
	- ---	5	BI.05 // SPARE
	+ ---	6	BI.06 // SPARE
	- ---	7	BI.07 // CBF I INITIATION
	+ ---	8	BI.08 // SPARE
	- ---	9	BI.09 // SPARE
	+ ---	10	BI.10 // SPARE
	- ---	11	BI.11 // SPARE
	+ ---	12	BI.12 // SPARE
	- ---	13	BI.13 // SPARE
	+ ---	14	BI.14 // SPARE
	- ---	15	BI.15 // SPARE
	- ---	16	BI.16 // SPARE

BINARY INPUT CARD

87T-1		BIM P5	
		RET670	
		LOCATION=P6	
		PLANT ADAPTED CONFIGURATION	
SHT.228/E8	+ ---	X51	
	- ---	1	BI.01 // SPARE
	+ ---	2	BI.02 // SPARE
	- ---	3	BI.03 // SPARE
	+ ---	4	BI.04 // SPARE
	- ---	5	BI.05 // SPARE
	+ ---	6	BI.06 // SPARE
	- ---	7	BI.07 // SPARE
	+ ---	8	BI.08 // SPARE
	- ---	9	BI.09 // SPARE
	+ ---	10	BI.10 // SPARE
	- ---	11	BI.11 // SPARE
	+ ---	12	BI.12 // SPARE
	- ---	13	BI.13 // SPARE
	+ ---	14	BI.14 // SPARE
	- ---	15	BI.15 // SPARE
	- ---	16	BI.16 // SPARE

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NG/D2-D (2012/01)

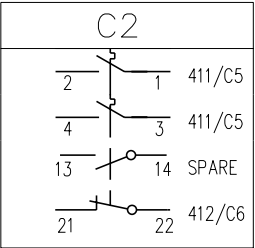
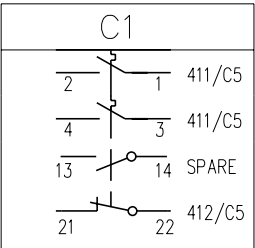
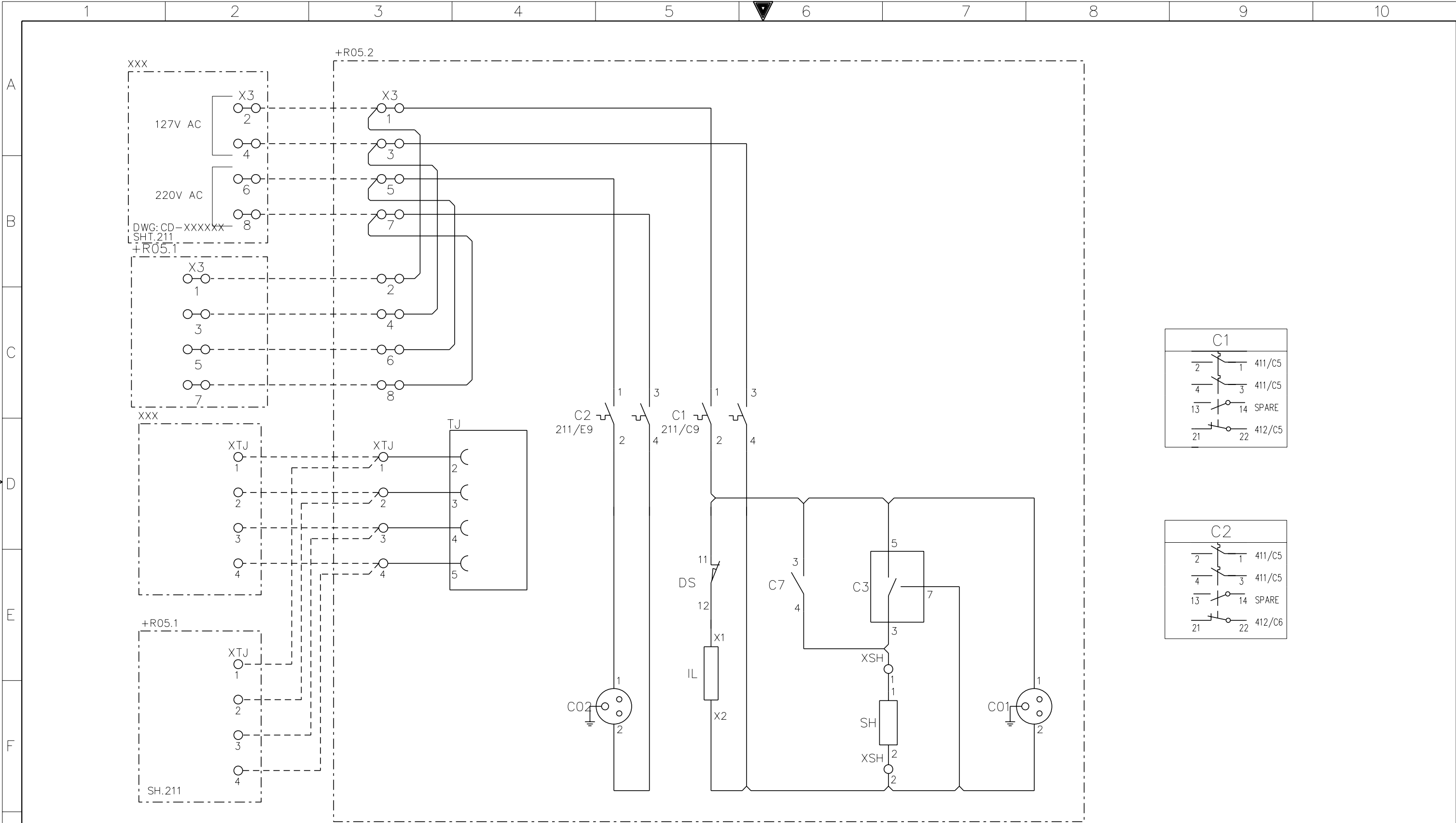
DMS


VECTOR

NGD200

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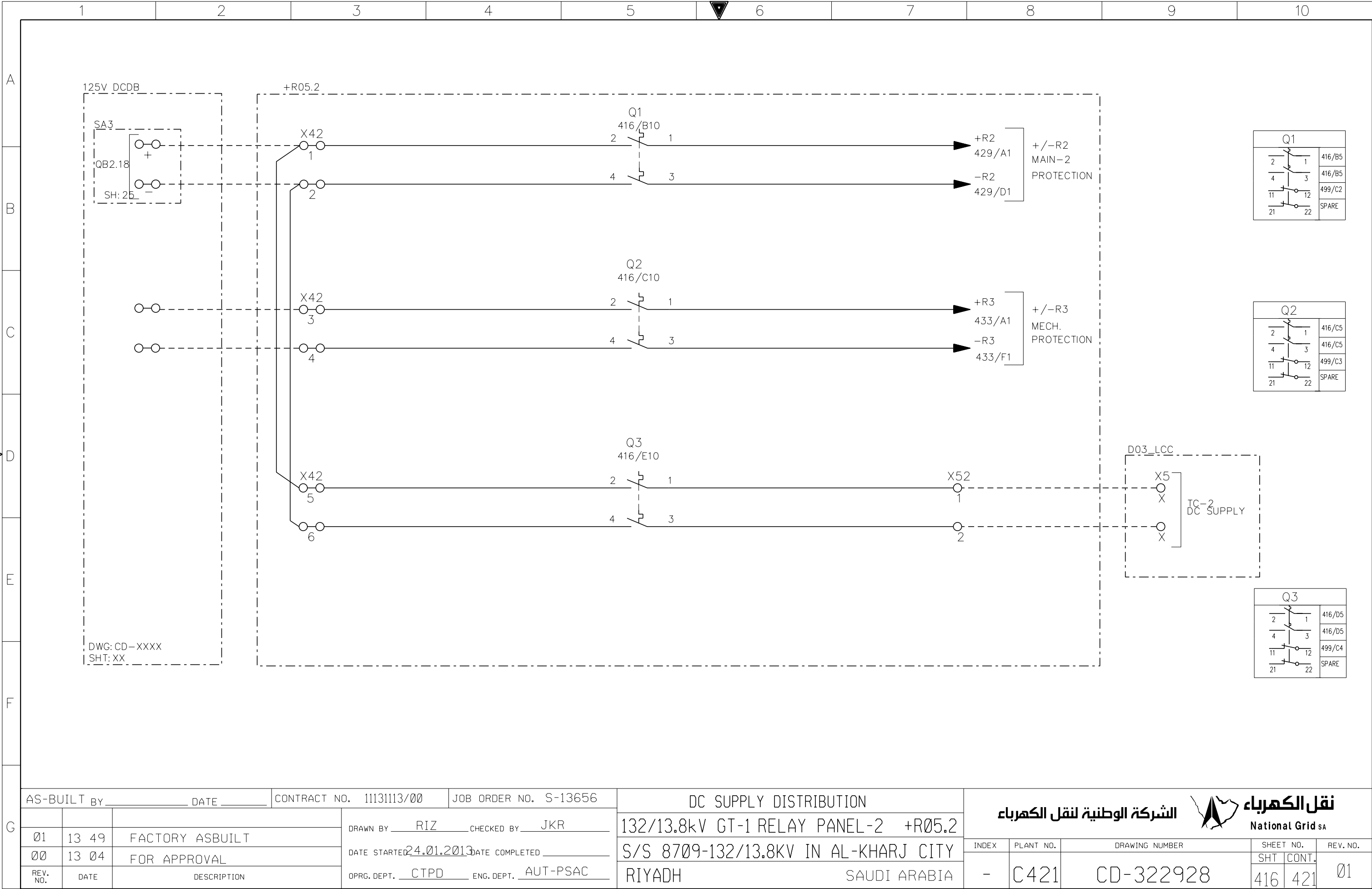
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC SUPPLY FOR ILLUMINATION & POWER SOCKET		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-1 RELAY PANEL-2 +R05.2		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322928		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA						411	412	



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VECTOR

NGD200



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00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

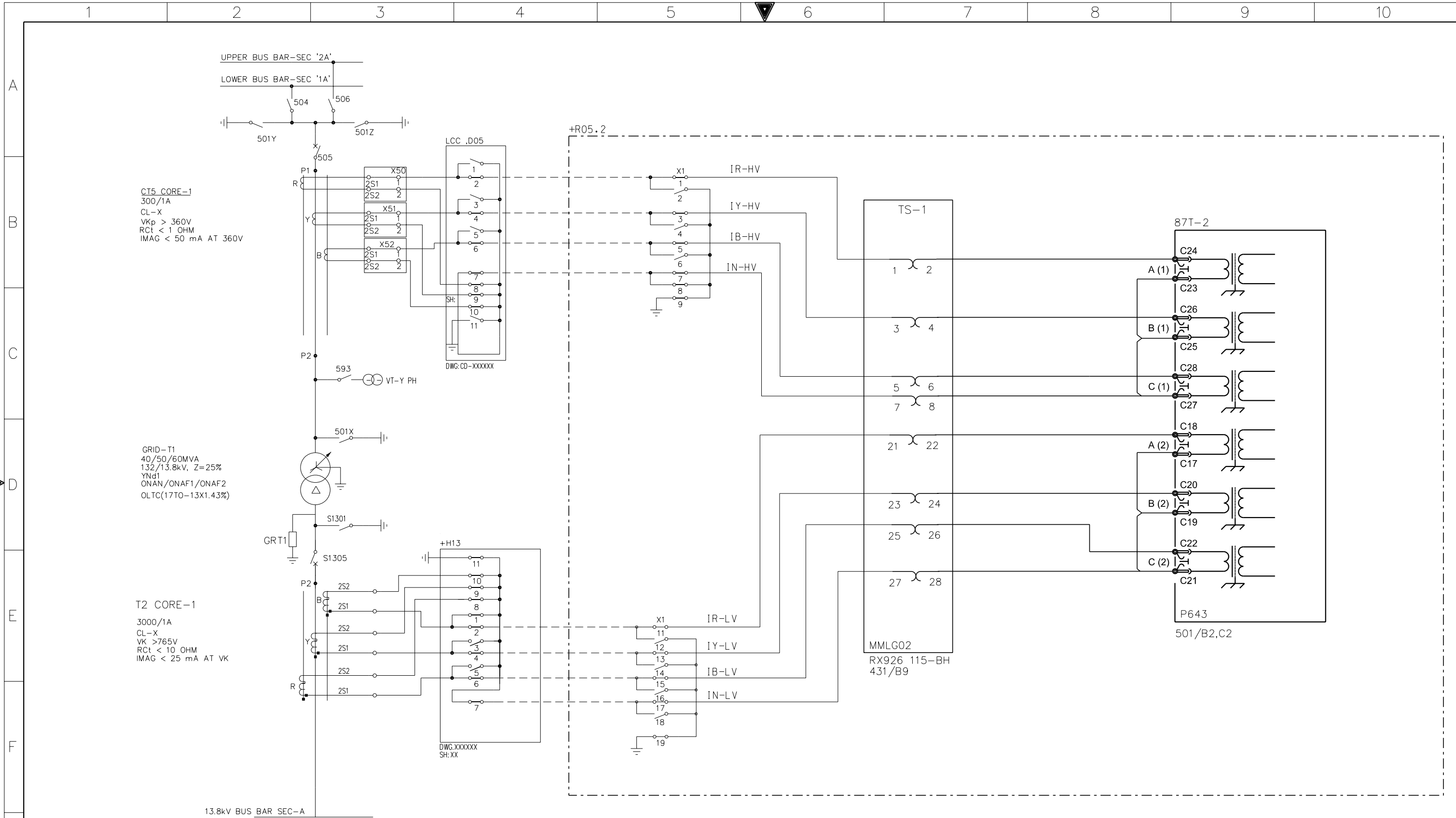
DC SUPPLY DISTRIBUTION

132/13.8kV GT-1 RELAY PANEL-2 +R05.2

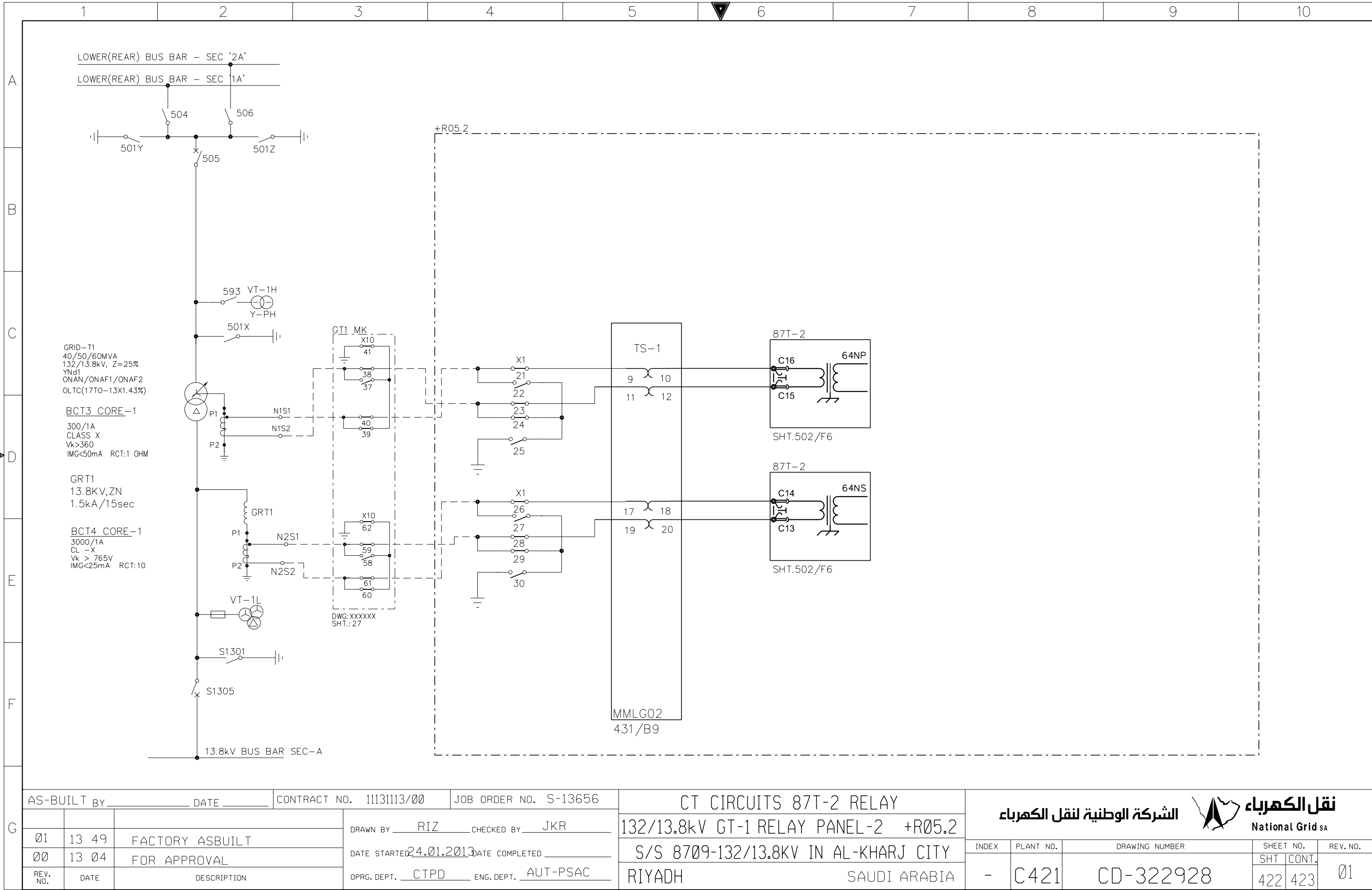
S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				
National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322928	SHT 416	CONT. 421
				01



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CT CIRCUITS 87T-2 RELAY		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
				DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8kV GT-1 RELAY PANEL-2 +R05.2									
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD-322928		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION										421	422	



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01 13 49 FACTORY ASBUILT

00 13 04 FOR APPROVAL

DRAWN BY RIZ CHECKED BY JKR

DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

CT CIRCUITS 87T-2 RELAY

132/13.8kV GT-1 RELAY PANEL-2 +R05.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء  
National Grid sa

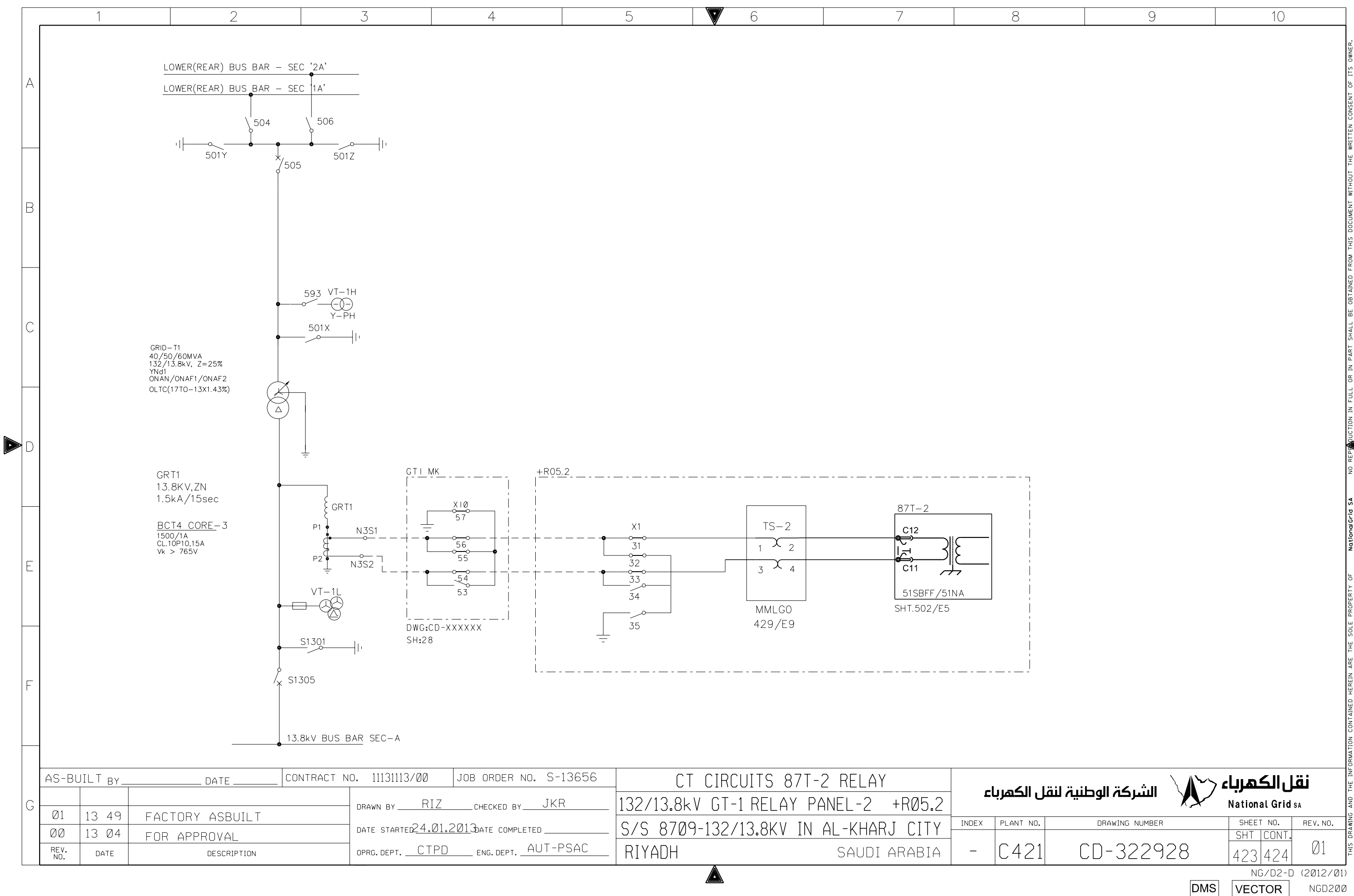
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			SHT	CONT.	
-	C421	CD-322928	422	423	01

NG/D2-D (2012/01)

DMS

VECTOR

NGD200



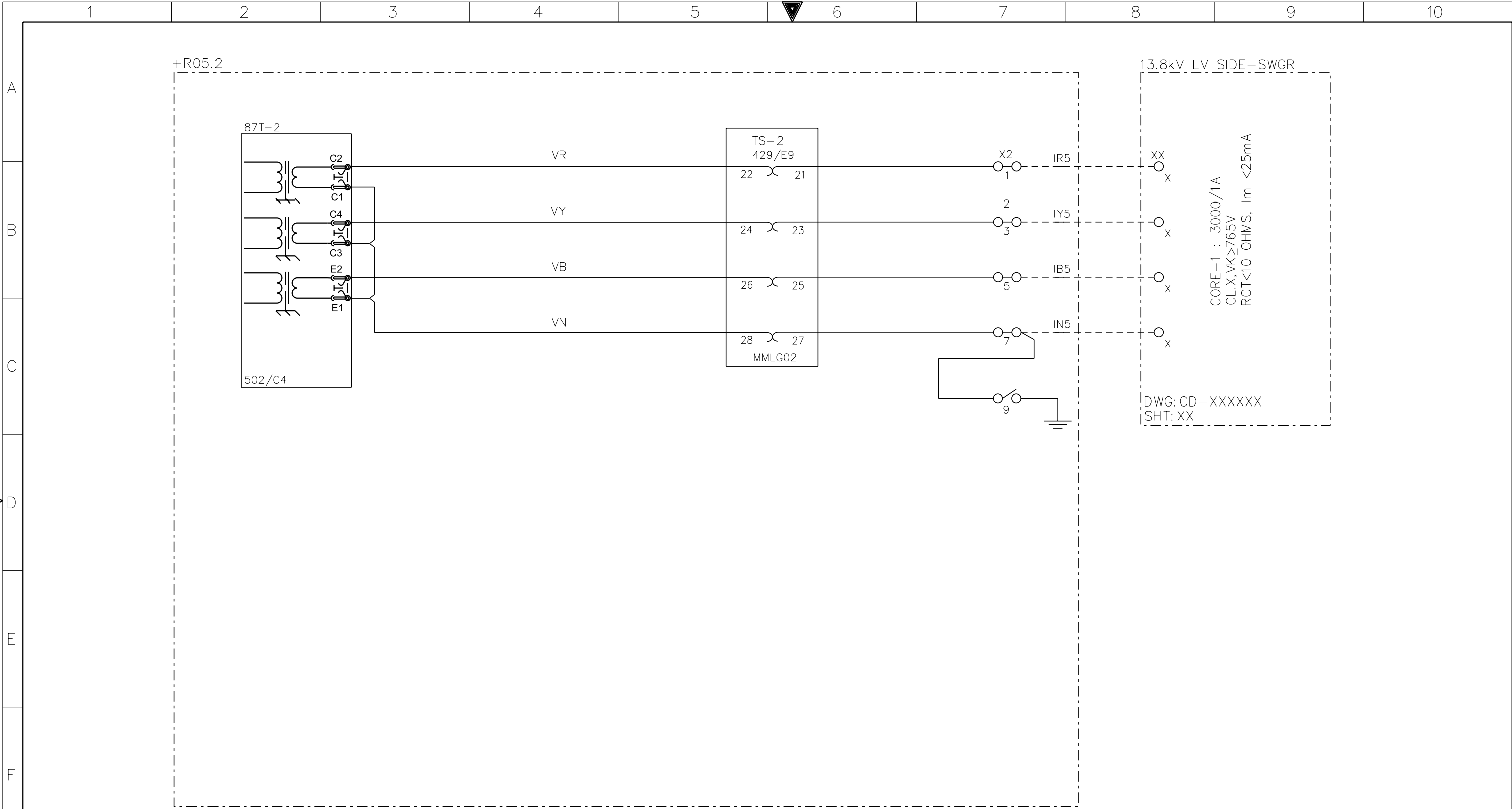
AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

CT CIRCUITS 87T-2 RELAY  
132/13.8kV GT-1 RELAY PANEL-2 +R05.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
-	C421	CD-322928	SHT	CONT.
-	C421	CD-322928	423	424
				REV. NO. 01





AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

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00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

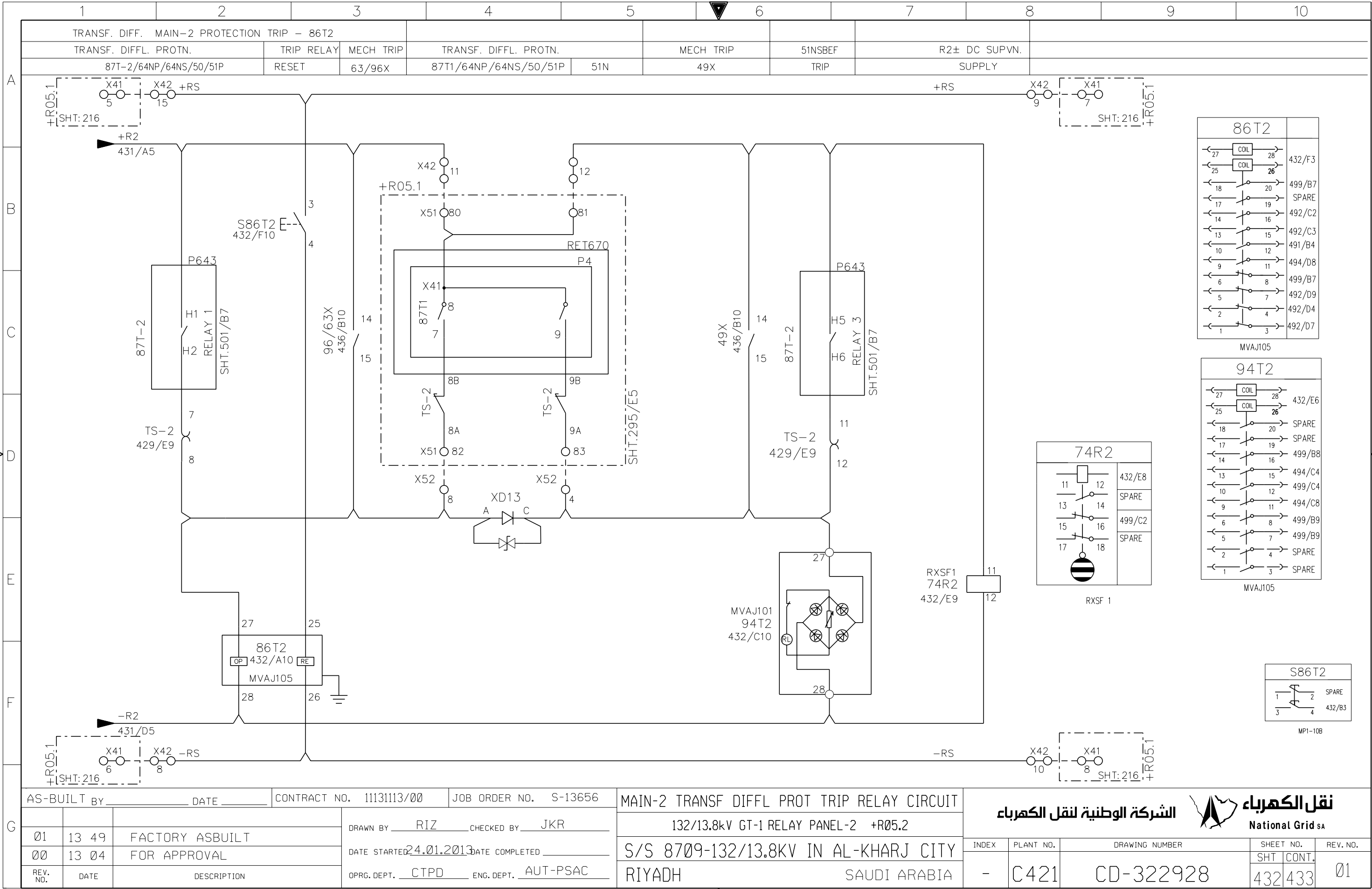
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DATE STARTED 24.01.2013	DATE COMPLETED
OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

CT & VT CIRCUITS 87T-2 RELAY
132/13.8kV GT-1 RELAY PANEL-2 +R05.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322928	SHT	CONT.	01
			424	429	







86T2		
27	COIL	28 432/F3
25	COIL	26 499/B7
18		20 SPARE
17		19 492/C2
14		16 492/C3
13		15 491/B4
10		12 494/D8
9		11 499/B7
6		8 492/D9
5		7 492/D4
2		4 492/D7
1		3

MVAJ105

94T2		
27	COIL	28 432/E6
25	COIL	26 SPARE
18		20 SPARE
17		19 499/B8
14		16 494/C4
13		15 499/C4
10		12 494/C8
9		11 499/B9
6		8 499/B9
5		7 SPARE
2		4 SPARE
1		3 SPARE

MVAJ105

74R2		
11		12 432/E8
13		14 SPARE
15		16 499/C2
17		18 SPARE

RXSF 1

S86T2		
1		2 SPARE
3		4 432/B3

MP1-10B

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الشركة الوطنية لنقل الكهرباء

NG/D2-D (2012/01)

DMS

VECTOR

NGD200



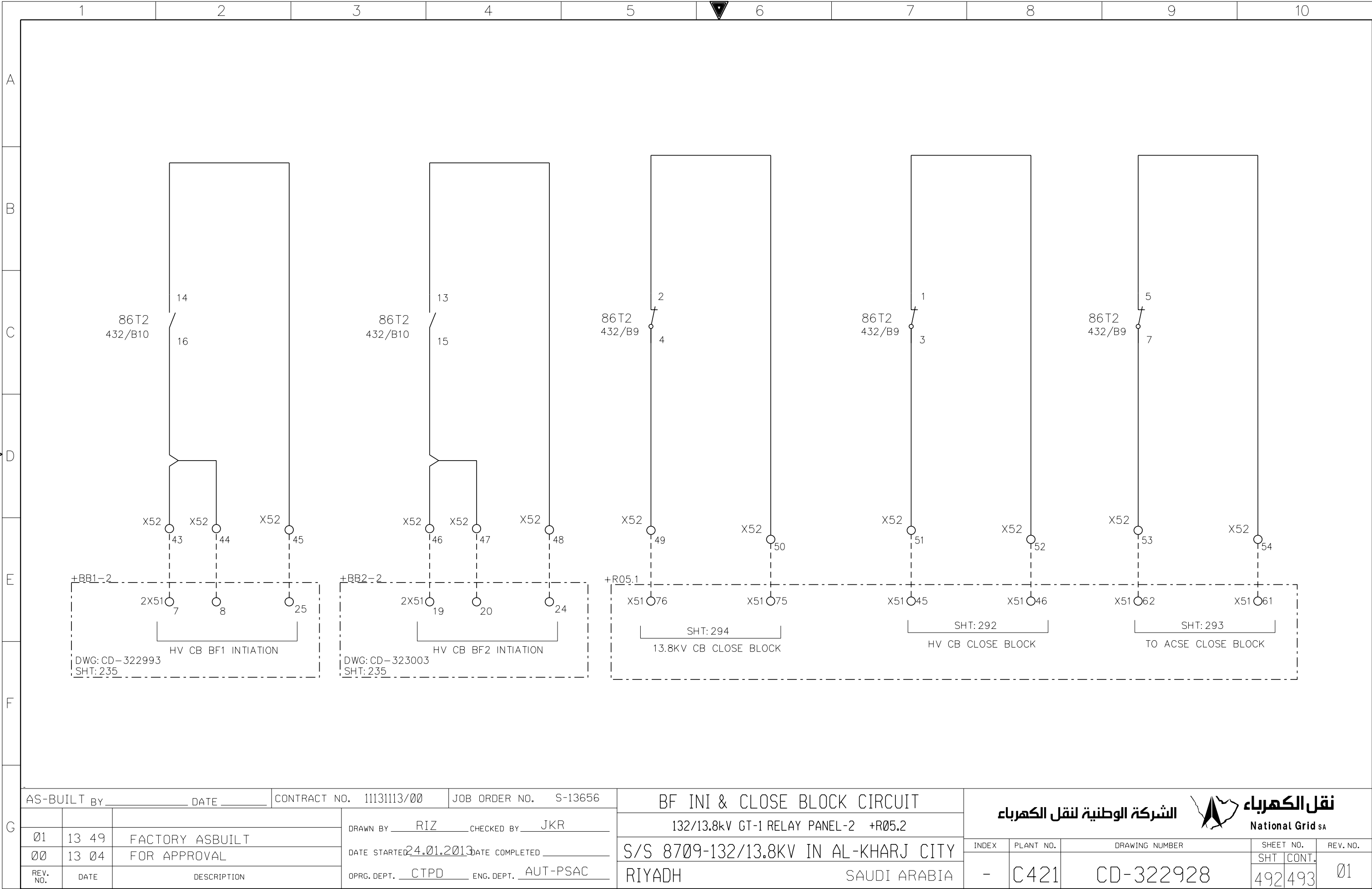




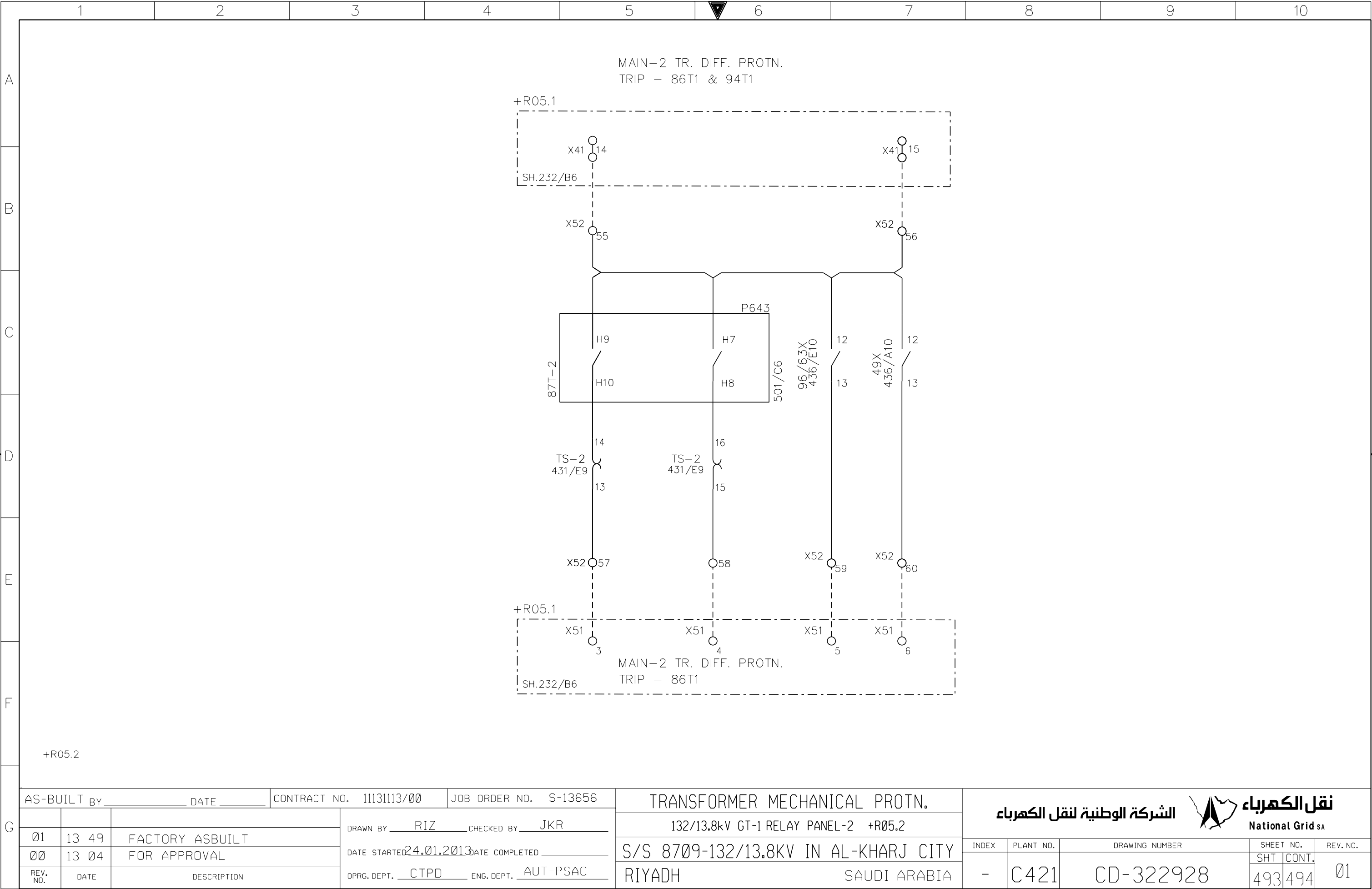


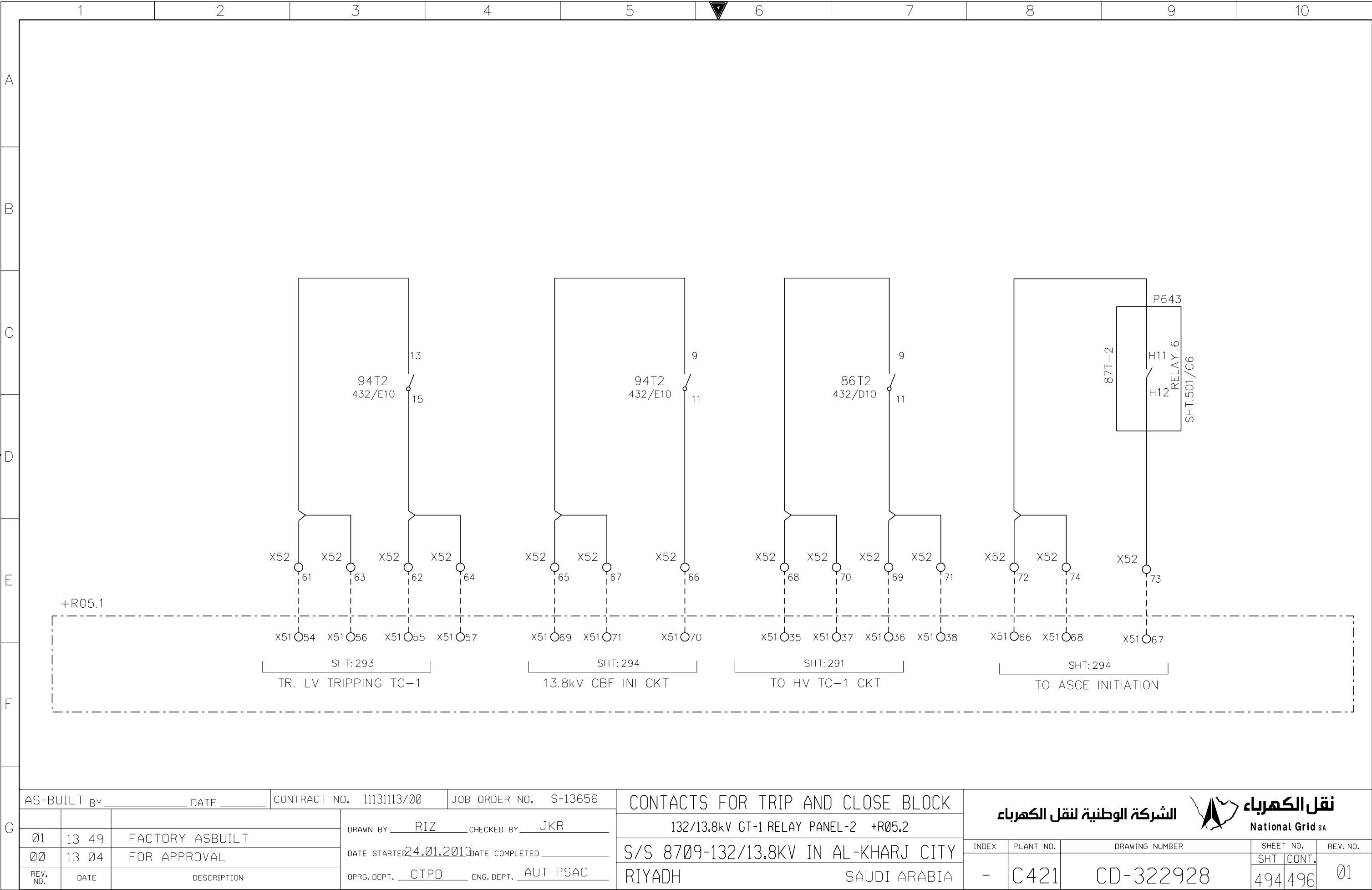




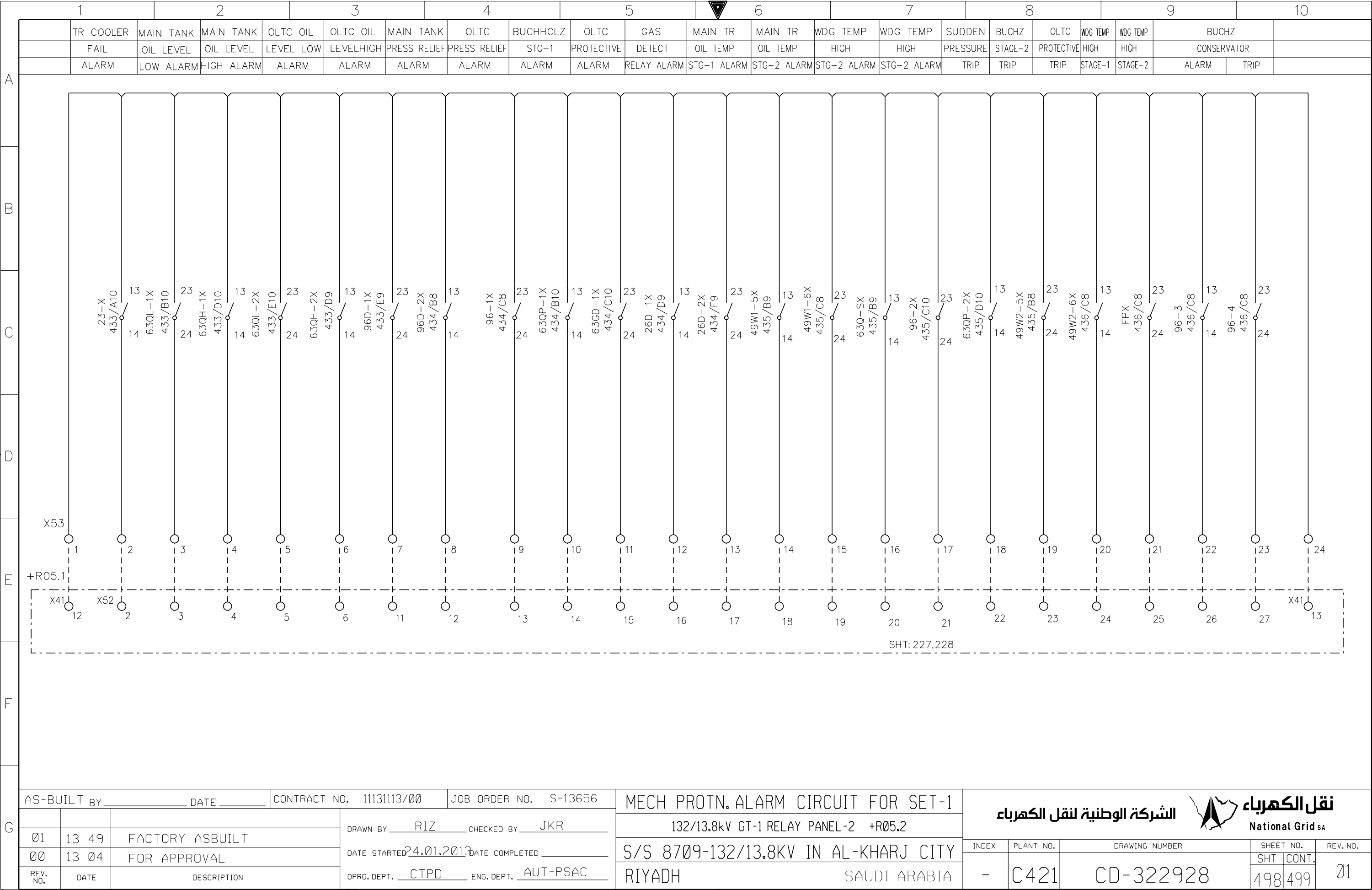


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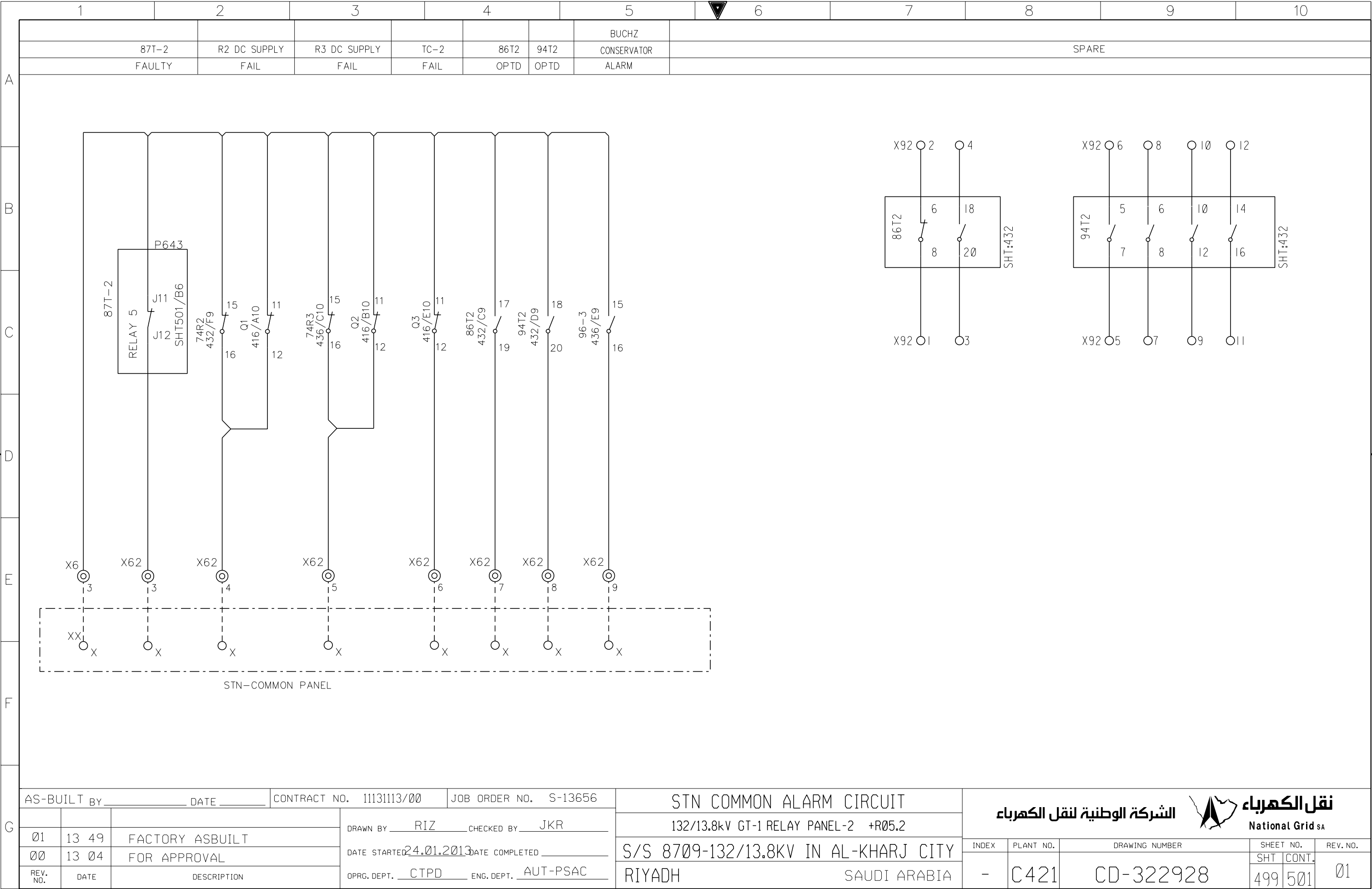








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CKTS.</td></tr><tr><td>421/B5</td><td>1</td><td></td><td></td><td></td><td>1</td></tr><tr><td>421/B5</td><td>2</td><td></td><td></td><td></td><td>2</td></tr><tr><td>421/B5</td><td>3</td><td></td><td></td><td></td><td>3</td></tr><tr><td>421/B5</td><td>4</td><td></td><td></td><td></td><td>4</td></tr><tr><td>421/B5</td><td>5</td><td></td><td></td><td></td><td>5</td></tr><tr><td>421/B5</td><td>6</td><td></td><td></td><td></td><td>6</td></tr><tr><td>421/C5</td><td>7</td><td></td><td></td><td></td><td>7</td></tr><tr><td>421/C5</td><td>8</td><td></td><td></td><td></td><td>8</td></tr><tr><td>421/C5</td><td>9</td><td></td><td></td><td></td><td>9</td></tr><tr><td>SPARE</td><td>10</td><td></td><td></td><td></td><td>10</td></tr><tr><td>421/E5</td><td>11</td><td></td><td></td><td></td><td>11</td></tr><tr><td>421/E5</td><td>12</td><td></td><td></td><td></td><td>12</td></tr><tr><td>421/E5</td><td>13</td><td></td><td></td><td></td><td>13</td></tr><tr><td>421/E5</td><td>14</td><td></td><td></td><td></td><td>14</td></tr><tr><td>421/E5</td><td>15</td><td></td><td></td><td></td><td>15</td></tr><tr><td>421/F5</td><td>16</td><td></td><td></td><td></td><td>16</td></tr><tr><td>421/F5</td><td>17</td><td></td><td></td><td></td><td>17</td></tr><tr><td>421/F5</td><td>18</td><td></td><td></td><td></td><td>18</td></tr><tr><td>421/F5</td><td>19</td><td></td><td></td><td></td><td>19</td></tr><tr><td>SPARE</td><td>20</td><td></td><td></td><td></td><td>20</td></tr><tr><td>422/D4</td><td>21</td><td></td><td></td><td></td><td>21</td></tr><tr><td>422/D4</td><td>22</td><td></td><td></td><td></td><td>22</td></tr><tr><td>422/D4</td><td>23</td><td></td><td></td><td></td><td>23</td></tr><tr><td>422/D4</td><td>24</td><td></td><td></td><td></td><td>24</td></tr><tr><td>422/D4</td><td>25</td><td></td><td></td><td></td><td>25</td></tr><tr><td>422/E4</td><td>26</td><td></td><td></td><td></td><td>26</td></tr><tr><td>422/E4</td><td>27</td><td></td><td></td><td></td><td>27</td></tr><tr><td>422/E4</td><td>28</td><td></td><td></td><td></td><td>28</td></tr><tr><td>422/E4</td><td>29</td><td></td><td></td><td></td><td>29</td></tr><tr><td>SPARE</td><td>30</td><td></td><td></td><td></td><td>30</td></tr><tr><td>423/E5</td><td>31</td><td></td><td></td><td></td><td>31</td></tr><tr><td>423/E5</td><td>32</td><td></td><td></td><td></td><td>32</td></tr><tr><td>423/D5</td><td>33</td><td></td><td></td><td></td><td>33</td></tr><tr><td>423/D5</td><td>34</td><td></td><td></td><td></td><td>34</td></tr><tr><td>423/D5</td><td>35</td><td></td><td></td><td></td><td>35</td></tr><tr><td>SPARE</td><td>36</td><td></td><td></td><td></td><td>36</td></tr><tr><td>SPARE</td><td>37</td><td></td><td></td><td></td><td>37</td></tr><tr><td>SPARE</td><td>38</td><td></td><td></td><td></td><td>38</td></tr><tr><td>SPARE</td><td>39</td><td></td><td></td><td></td><td>39</td></tr><tr><td>SPARE</td><td>40</td><td></td><td></td><td></td><td>40</td></tr></table>	REFERENCE	X1 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CON & PROTN CKTS	492/E7	51				51	492/E8	52				52	492/E9	53				53	492/E10	54				54	SPARE	55				55	SPARE	56				556	493/E5	57				57	493/E5	58				58	493/E7	59				59	493/E7	60				60	494/E3	61				61	494/E4	62				62	494/E4	63				63	494/E5	64				64	494/E5	65				65	494/E6	66				66	494/E5	67				67	494/E7	68				68	494/E7	69				69	494/E7	70				70	494/E8	71				71	494/E9	72				72	494/E10	73				73	494/E9	74				74	495/B2	75				75	495/E2	76				76	495/B4	77				77	495/E4	78				78	495/B5	79				79	495/E5	80				80	495/B7	81				81	495/E7	82				88	SPARE	83				83	SPARE	84				84	SPARE	85				85	SPARE	86				86	SPARE	87				87	SPARE	88				88	SPARE	89				89	SPARE	90				90	<table><tr><td>REFERENCE</td><td>X42 DC 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